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(57) Abstract

The diagram illustrates a digital music system architecture, divided into a DISPLAY 501 and a PROCESSOR 511.

DISPLAY 501:

- VIRTUAL PLAYER 503:** Displays a graphical interface with buttons.
- DESKTOP AREA 505:** A dashed box representing the virtual desktop.
- VIRTUAL RACK 507:** A grid of icons representing a collection of music.
- VISUAL DISCS 509:** Three disc icons representing digital music files.

PROCESSOR 511:

- ANIMATOR 517:** Manages the visual presentation of the desktop area.
- FILE LOADER 519:** Loads data from the FILE CATALOG into the PLAYBACK ACTIVATOR.
- PLAYBACK ACTIVATOR 513:** Controls the playback of digital music.
- FILE CATALOG 521:** A database of digital music files.
- DATA COLLECTOR 533:** Collects data from various sources.
- DOWNLOADER 534:** Downloads digital music from the INTERNET.
- 515-1 FORMAT 1 PLAYER ... 515-N FORMAT N PLAYER:** Multiple digital music players for different formats.
- 522 STORAGE:** Includes HARD (523) and REMOVABLE (525) storage options.
- 526:** A set of icons representing digital music files.
- 529:** A group of icons representing digital music files.
- 531:** A group of icons representing digital music files.
- TRACK 1 527 ... TRACK M 531:** A set of icons representing digital music files.
- INTERNET 535:** A cloud icon representing the Internet.
- CD BURNER 545:** Burns digital music onto CDs.
- D/A 549:** Digital-to-Analog converter.
- MP3 PLAYER 547:** A dedicated MP3 player.
- 551:** A speaker icon representing the audio output.
- 533:** A speaker icon representing the audio output.
- WEB RADIO BROADCASTER 543:** Broadcasts digital music over the Internet.
- MUSIC PROVIDER 537:** Provides digital music content.
- 539:** A server icon representing the music provider.
- 541:** A group of icons representing digital music files.

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UNIVERSAL MUSIC PLAYER

BACKGROUND OF THE INVENTION

Songs and compact disc (CD) content are typically available for downloading over the Internet for as little as a dollar per song. It takes only minutes
5 to download an entire album. To play such files, the user typically uses a special software program, i.e., a player, that is capable of understanding the particular format and playing it on speakers connected to the computer. Typical players such as WinAmp and LiquidAudio only read a single format, so that a user must have several players to play the various formats in which a music file may be
10 downloaded.

The standard that constitutes the Compact-Disc Digital Audio (CD-DA), also called the Red-Book, has been designed by Sony and Philips to contain only audio tracks. A maximum of 99 tracks or 74 minutes and 33 seconds can be printed on a spiral going from the center to the edge of the CD. The disc itself is divided into
15 three areas: Lead In, Program, and Lead Out.

A table of contents, situated in the Lead In area, specifies only the starting place of each track in minutes, seconds and blocks. Each block contains 1/75 of a second of audio data. The Program area contains the audio data of each track. The data is made of two channels of audio stream. Each stream is sampled at a
20 frequency of 44.1KHz with 16-bit accuracy. The Lead Out area contains only blank sectors (90 seconds of silence).

Contrary to other standards, such as the Yellow-book (CD-ROM), there is no additional information such as text, image, or identification stored on the CD.

SUMMARY OF THE INVENTION

25 The present invention provides a front-end consumer interface. It merges all of a user's music and music-related activities into a single unified user interface, which is based on real-world metaphors, providing a fun, inviting and easy-to-use multimedia music experience. As a desktop-based portal, the present invention establishes a two-way conversation between the user and a music supplier by
30 exploiting the Internet and augmenting the user's choices.

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An embodiment of the present invention provides playback for common audio formats such as MP3, Liquid Audio, WMA and WAV, and allows the user to organize his collection of downloaded music in a manner not previously available.

The present invention improves on the prior art, first by providing "color" information., i.e., the printed information that typically accompanies a CD, which
5 can include cover art, pictures and liner notes.

Once the content of a CD, or other audio content, has been downloaded from a music supplier or other source or copied digitally by the user, it is saved, as a "virtual CD," on some storage means, such as a hard disk, or a removable disk, for
10 example, a Zip drive made by Iomega Corporation. After receiving many such virtual CDs, users tend to forget exactly where a specific virtual CD has been stored, i.e., in what folder, on what disk. The present invention maintains this information and knows where to find a downloaded CD wherever it is stored. A user interface is provided which aids user access, so that the user never has to search for the CD, so
15 far as retrieving and playing the CD are concerned.

The present invention, having found the desired CD, can play the music back through any appropriate player, or through its own player.

For example, a user may visit a Web site which offers downloadable music, e.g., CD content, although the present invention is easily extendable to other formats
20 including, but not limited to, video formats such as DVDs, and other audio formats as well. The user selects some music such as an MP3 file, by clicking on the music and selecting the desired storage drive. The music file is then downloaded to the selected storage device. Transfer typically takes on the order of a minute for a song, or about fifteen minutes for a CD. A typical song consumes about 3MB of disk
25 storage.

Alternatively, the user can digitally record music from a CD player.

The user simply clicks on the CD rack to select a CD, clicks on a CD "jewel" box graphic to open it, and drags the CD out of the jewel box to the CD player to play it. A CD presented to the user has the appearance of a real CD. The covers
30 look like the common "jewel" cases that are currently in use, whether open or closed. Dragging a second CD to the CD player while the first is playing preferably causes the first CD to stop playing and moves the first CD back to its jewel case.

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Alternatively, the user can simply click on a CD in an open case, and the CD is instantly moved to the player using animation.

The present invention is fun and interactive, and provides an interface which a user who is used to a physical CD and CD player can easily understand. Once the
5 music is downloaded over the Internet, the user does not need to be concerned with technical computer operations, for example, finding the music and finding the proper player. Prior art players are not as successful at emulating a physical CD player as the present invention, which fully copies the appearance and functionality of a CD player. This helps the user to bridge the gap between the physical world and the
10 digital world of music and other audio. Of course, the same technique can be used for video and other media presentations, as well.

The universal player (UP) is the first of its kind to present the user with access to streamed audio/radio and video content; music-related auctions; sampling of digital music; purchasing managing and playing back digital audio files; ripping
15 and burning CDs, that is copying CD content from a CD to storage, and copying CD content from storage to a writeable CD; cataloging, managing and playing back standard CDs, including presentation of lyrics, liner notes, album cover art and track listings, as well as managing the transfer of music tracks to portable audio players and removable storage, supporting digital rights management techniques as
20 appropriate.

Virtually every desktop or laptop personal computer (PC) today has a CD-ROM drive capable of playing back standard audio CD's. The projected installed base of recordable CD's, e.g., CD-R and CD-RW formats, was expected to reach 20 million by the end of the calendar year 1999. Exploiting PC users' demonstrated
25 interest to listen to music while at their computers, the UP launches automatically whenever a standard audio CD is inserted, presenting the user with a friendly and intuitive interface.

If the user is currently on-line, the UP can access an Internet music database service to retrieve CD meta-data such a track listings, artists, title, genre, album
30 cover art, liner notes and lyrics, etc., and can automatically populate the UP interface with this information. The user can then listen to the CD, digitally record all or part of the CD to his hard drive or removable storage ("ripping") or simultaneously listen

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to and record all or part of the CD. The same user interface also allows the user to organize his music into custom playlists or compilations, and to re-record the digital files he has recorded or downloaded to a standard audio CD format (CDR) for playback at, for example, his PC, his car stereo or his "CD-Walkman" or

5 "boombox".

Because multiple formats exist for storage and playback options, managing a music collection is a challenge. Just retrieving a music track from the Internet, a CD collection or a digital music file stored on a hard drive or removable storage device can be difficult. Matching the audio file format, e.g., MP3, AAC, QuickTime, .wav,

10 AIFF, MS Audio. etc., with the proper playback application complicates matters. The virtual player of the present invention automatically selects and activates the proper playback software for virtually all popular digital file formats including standard audio CDs, DVDs, etc.. The software may be internal to the universal player, or may be supplied by another vendor.

15 In addition, the universal player allows a user to organize his music at one central location and in a variety of ways. Users can sort and/or categorize their music by genre, title and/or artists as well as create custom playlists or compilations. The universal player remembers the physical locations of a user's music and manages complex security and copy protection issues such as "right to copy" or

20 "checking-out" songs to portable audio playback devices such as secure versions.

Having "aggregated" a music collection into one simple user interface that is based on real world metaphors, the universal player visually mimics the best elements of standard audio CD players, television and FM radio, allowing the user to easily select and listen to or watch his favorite music or videos. The virtual player

25 also assists the user in finding music he is interested in sampling, and purchasing from a music provider.

Therefore, in accordance with an embodiment of the present invention, a universal music player system includes a virtual player which has the appearance and functionality of a real media player. One or more media object displays display

30 media objects which are owned by or accessible to a user. An animator visually emulates loading a media object from the virtual rack onto the virtual media player responsive to a user command. A loader loads a media object file corresponding to

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the selected media object in response to the user command. Finally, a playback activator selects playback software appropriate for the loaded file's format and for activating the selected playback software to play the loaded media object file.

5 A media object is a representation of, for example, physical and virtual CDs or DVDs or other media, or individual selections such as songs, or user-defined compilations.

The universal player system can also include a desktop area in which available media objects are displayed, each media object having the appearance of being contained in a container. Available media objects are those which have been
10 moved from the virtual racks for immediate access and availability.

A catalog of media objects owned by or accessible to a user is maintained, such that at least one of virtual rack displays media objects referenced in the catalog.

In an embodiment of the present invention, in which media objects represent CDs, the virtual media player has the appearance and functionality of a real CD
15 player. Following the real world metaphor, the CD media objects, or "virtual CDs," appear as jewel cases.

As in the real world, one embodiment of universal player system has a virtual player which has a tray which holds a single media object. Another embodiment has a rotatable tray which holds up to a predetermined number of
20 media objects. Another embodiment accepts a virtual magazine which holds up to a predetermined number of media objects. Yet another embodiment has a rotatable, jukebox-style media holder which holds up to a predetermined number of media objects.

Each media object file is represented by an icon which is unrelated to where
25 the media object file is stored. In at least one embodiment, this icon has the appearance of a container, such as a jewel case. The appearance of icons is independent of where the associated media object files are located, which may be for example, in any or all of memory, hard drive, removable drive, CD-ROM drive (for a physical CD), or even at an Internet music provider site.

30 Upon clicking by a user on a container, the container opens, revealing the media object inside. For example, if the media object represents a CD, a virtual CD is visible inside the open container. As with real CDs, a booklet can be included in

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the container or case, such that when the user clicks on the booklet, liner notes are displayed. Where the media object is a virtual CD, liner notes include a list of all tracks on the virtual CD. Liner notes can include, but are not limited to, artist reviews, reviews about the instant object, e.g., CD or DVD, artist resume, artist
5 biography, discography, cover art, and / or pictures.

In at least one embodiment of the universal player system, a media object file contains audio information. This can be, for example in MP3 format, Quicktime format, or some other format. Audio information can include music, but may also include other audio such as speech.

10 In another embodiment, a media object file contains video information, which typically includes an audio soundtrack.

The virtual player can have an information display for displaying information about the playing media object file. Such information can include the name of at least one artist associated with the playing media object file, or a title of
15 the CD or the particular song being played, or the movie being played back. Other information which can be displayed includes, for example, elapsed time.

When a user clicks on an exposed media object, that is, a media object which can be seen inside an open case, or where cases are not used, simply a visible media object, the media object is visually loaded onto a media object holder, such as a
20 single- or multiple object tray, or a multiple object magazine or jukebox. After the media object is loaded onto the media object holder, the media object holder closes and the associated media object file automatically begins to play. The animator emulates a smooth loading of the media object onto the media object holder.

In a further embodiment of the universal player system, a downloader
25 downloads media object files from a provider. A librarian stores downloaded media object files and maintains references to their stored locations. These downloaded media object files are typically purchased from the provider by a user.

In a further embodiment of the universal player system, a Web-receiver receives streams from a Web broadcaster. These streams can be, for example, video
30 or audio streams, and can be broadcast by a Web radio broadcaster.

Media objects can also be created by recording information from an external source, such as a CD player.

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In at least one embodiment, a media object display is a "virtual rack" which holds at least one media object, preferably media objects owned by or accessible to a current user. The universal player includes a mouse, trackball, trackpad, keyboard entry or other means for allowing a user to move or drag a media object from the
5 virtual rack to the desktop area, or directly to the virtual player. The virtual rack can display media objects according to a selected category, including, but not limited to, genre, artist, or title. The selected category itself can be displayed on the virtual rack.

In a further embodiment, a virtual rack emulates a spinner, as found, for
10 example, in restaurants where a user selects a song at his table to be played on a centrally located jukebox. As with the physical device, in the universal player, a user can spin a spinner to scroll through a selected category.

In a further embodiment, the universal player includes means for allowing a user to define at least one compilation, where a compilation comprises a list of
15 media objects, including media collections such as CDs, selections such as individual tracks, and other compilations. Each compilation itself appears and behaves as a media object.

Specifically, in one embodiment, a compilation is created by dragging a first selection, such as a CD or DVD, one or more tracks of a CD or DVD, or another
20 compilation, to an empty slot in the virtual rack. Adding to the compilation is done by dragging subsequent selections to the compilation.

When a user clicks on a media object, the contents of the media object are displayed. The contents can be displayed as a list of selections or tracks, or if the media object is a compilation, the media objects which make up the compilation.
25 Status for each item can also be displayed. Such status can include, but is not limited to, the source from which the media object was obtained, or the physical location, for a physical object such as a CD or DVD, which the user has previously specified as a storage location.

In yet a further embodiment of the universal player, a data collector collects
30 statistical data about a user's use, including but not limited to, a list of purchased music, a list of sampled selections downloaded from a provider, a history of the

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user's playback of any of media or selections, or a history of selections received via Web radio.

The data collector itself preferably includes a transmitter which sends the collected statistical data to a vendor or music provider. The vendor can then offer
5 the user a special promotion, or recommend music to the user, based on the collected data.

A further embodiment of the present invention includes means for playing back a physical CD such as a CD-ROM drive, a CD player with a digital output. A CD identifier identifies a physical CD being played back. One way to identify a CD
10 is to manually enter, e.g., by keyboard or by scanning a bar code identifier or by scanning a text identifier and using optical character recognition, an identification code imprinted on the CD or the CD package. The code is then matched against a database, for example, at a music provider, and the CD identified.

Alternatively, a software "spider" can examine the shape of data on the CD
15 and compare the shape against a database of CD data "shapes," thereby identifying the CD. The shape of data can be, for example, timing information. Alternatively, the shape could be derived from portions of the data itself, such as the first 100 bits of each selection, or from some other aspect of the data or the data organization.

The downloaded CD can be registered with the universal player's database
20 by the librarian, or with a vendor or music provider's database, or both.

In one embodiment, a vendor searcher allows the user to search for media in the vendors's database. A virtual shopping basket displays the user's purchase selections

In a further embodiment, a preview guide displayer displays a preview guide
25 which is downloaded from a vendor upon a request by the user. The preview guide can be periodically updated by the vendor. For example, the guide can be updated on a monthly or weekly basis.

The preview guide can be customized by a vendor or music provider based on user use statistical data, such as is collected by the data collector. The preview
30 guide can include, but is not limited to, promotion offers, pictures of featured artist, cover art, liner notes, concert dates for an artist, trailers, track samples, and reviews.

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Another embodiment of the present invention includes a community screen for providing links to related Web sites. The community screen can include a link to customizable yellow pages which provide searchable links to related Web sites.

Further embodiments of the present invention include a viewer for viewing
5 videos, and / or a virtual receiver, such as a virtual radio or video receiver which receive and play respectively audio and video streams broadcast over the Web radio broadcasts, where a receiver has the appearance and functionality of a real radio or video receiver, or a television. A librarian stores a portion of the received broadcast and maintains references to their stored locations.

10 BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of preferred
embodiments of the invention, as illustrated in the accompanying drawings in which
like reference characters refer to the same parts throughout the different views. The
15 drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

Fig. 1A is a block diagram of an embodiment of the present invention.

Fig. 1B is a schematic diagram illustrating the relationship between visual objects, their logical pointers and the associated media objects.

20 Fig. 2A is an illustration of the main window console of an embodiment of the present invention.

Fig. 2B is a an illustration of the main window console of Fig. 2A, additionally demonstrating opening of a jewel box.

Figs. 3A-3E are illustrations of the main window console of Fig. 2A which
25 demonstrate the animation of a selected virtual CD from the desktop into the virtual player.

Figs. 4A-4F are illustrations of liner notes as provided by the present invention.

Fig. 5A is an illustration of the main window of an alternate embodiment of
30 the present invention, illustrating two virtual racks, or spinners.

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Fig. 5B is an illustration showing the meta data draw, which shows the cover art of the CD that is playing.

Fig. 5C is an illustration showing the meta data draw having an advertisement displayed.

5 Figs. 6A-6C are illustrations demonstrating how compilations are created and maintained.

Figs. 6D and 6E are illustrations showing how cover art is selected for a compilation.

10 Fig. 7 is an illustration showing how the embodiment of Fig. 5A displays the musical content of a media object such as a virtual CD.

Figs. 8 is an illustrations showing how the embodiment of Fig. 5A can provide a list of media objects.

Fig. 9 is a block diagram illustrating an embodiment of the present invention having both a local database and a remote music-provider database.

15 Fig. 10 is an illustration demonstrating the 6-CD rotating tray of the embodiment of Fig. 5A.

Fig. 11 is an illustration of a search feature in an embodiment of the present invention.

20 Fig. 12 is an illustration of a virtual shopping basket in an embodiment of the present invention.

Fig. 13 is an illustration of a monthly music guide in an embodiment of the present invention.

Fig. 14 is an illustration of a alternate monthly music guide.

25 Fig. 15 is an illustration of a community screen in an embodiment of the present invention.

Fig. 16 is an illustration of a virtual radio and video screen of an embodiment of the present invention.

Fig. 17 is a schematic diagram illustrating how an embodiment of the present invention identifies a CD from the shape of the CD's data.

30 DETAILED DESCRIPTION

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Fig. 1A illustrates an embodiment 500 of the present invention. A display device 501 such as a CRT display or an LCD display, driven by a processor 511, displays a virtual player 503 which emulates all of the functionality of a real player. A virtual rack 507 displays media objects 509 such as virtual CDs, virtual DVDs, compilations, video cassettes, etc.

As in the physical world, a user can move one or more visual objects 509 from the virtual rack 507 to a desktop 505, where they can be opened. Once opened, the contents of the container, such as liner notes and cover art, can be examined. In addition, a visual object 509 can be dragged to the virtual player 503 for playback.

Each visual object 509 represents, for example, a CD, a single song or group of songs, or a compilation of CDs. CDs, for example, can be physical or virtual. A virtual CD is, for example, a collection of song files corresponding to the songs of the corresponding physical CD, if any, or simply to the songs of a collection defined by a vendor as a virtual CD. Other media such as DVDs can also be represented.

The term "media collection" is used herein to refer to a particular album or collection or presentation, such as a CD or a DVD. Each media object is associated with a media object file 529 which contains data for the actual audio, video, picture, etc. These media object files can be stored in multiple locations and on multiple types of storage 522, such as hard drives 523 and removable drives 525. Media object files 529 can also be in various formats, such as MP3 and Quicktime.

In the processor 511, a file catalog 521 tracks the locations of all of the media object files 529 to which the user has access locally. In addition, the file catalog 521 is capable of tracking the locations of physical CDs 527 owned by the user, and the individual songs or tracks 531 on each CD. Of course, this applies as well to other types of media such as DVDs. Finally, the user may also have paid for access to music or other media object files 541 which a music provider 537 maintains in its own storage 539. The file catalog 521 maintains a list of these media object files and locations, such as corresponding Web universal resource locators (URLs). A downloader 534 retrieves these media object files 541 from the music provider 537 over the Internet 535, upon a request by the user.

In one embodiment of the present invention, the user can drag a media object 509, such as a virtual CD, to the virtual player 503 to begin playback. Alternatively,

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the user can click on a media object which is displayed in the desktop area 505 to open the media object's case, which for CDs has, for example, the appearance of a jewel case. Clicking on the exposed media object activates the animator 517, which provides smooth animation, opening the tray of the virtual player 503. smoothly
5 moving the selected media object to the tray, and closing the tray.

When a media object is loaded into the virtual player's tray, the media object file loader 519 retrieves the media object file or files and passes them to the playback activator 513. The playback activator 513 activates selects a player suited to the particular format of the media object file, for example, player 515-1, from a
10 group of available players 515. Generally, these players 515 are provided by various vendors, but one embodiment of the present invention also provides a player which is able to interpret one or more formats.

The selected player, here 515-1, plays back the media object file. Assuming a music file, the audio output can be sent to, for example, a CD burner 545 to create
15 a customized CD, or a portable player such as an MP3 player 547. Alternatively, the output can be converted to an analog signal by an analog-to-digital converter 549 and amplified by amplifier 551, where it can be played on external speakers 553, headphones, or for example, recorded to analog tape.

In addition, if the user inserts a CD into a CD-ROM drive, the universal
20 player immediately responds by scanning the CD for its data shape, accessing a remote database over the Web to identify the CD from the shape, and retrieving information such as cover art, title, lyrics, etc.. The CD then appears as a visual CD on the rack.

In addition, a Web radio broadcaster 543 may broadcast audio streams,
25 which can be captured by a Web radio feature of the present invention (not shown), stored in local storage 522, catalogued by the file catalog 521, and displayed in the virtual rack 507.

Finally, a data collector 533 collects statistical information about the user's preferences, and uploads the information occasionally to the music provider 537,
30 which can then customize music previews and periodic guides, and offer special promotions.

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Fig. 1B illustrates the relationships between visual objects 509, the corresponding pointers 524A-524D within a catalog 521 to media objects, and the media objects. In one embodiment, visual objects 509 come in three varieties, marked "R" for real or physical 509A, "V" for virtual 509B and "C" for a
5 compilation 509C. Each of these objects has a corresponding pointer, 524A, 524B, 524C respectively, in the catalog 521. A real visual object 509A points to a physical CD 527. The physical CD 527 comprises a plurality of tracks 531.

A virtual object 509B, on the other hand, points to a virtual CD 526, which comprises a plurality of files 529A. These files 529A can include, for example,
10 audio information, video information, cover art, lyrics, liner notes, etc.

A visual compilation 509C points to a play list 528. The play list 528 is simply a file 529B containing a list of all the items to be included in the compilation.

The objects 526-528 are shown as local media objects. In addition, visual object 509D, points to a remote virtual CD 560 which is accessed over the internet
15 535. The virtual CD 560 comprises a plurality of files 541 which must be downloaded to the universal player.

The term "CD" as used herein is used to refer to a physical CD, virtual CD, or a visual CD.

Fig. 2A illustrates the main window console 10 of one embodiment of the
20 present invention. A realistic virtual CD player 12, corresponding to 503 of Fig. 1, sits at the top of the screen and a collection 14 of playable CDs 14A, from which a user can make a selection, is organized beneath the virtual CD player 12. The CDs appear visually as "jewel" cases in which CDs are commonly stored, along with the appropriate cover art, when available.

25 The virtual CD player 12 includes a Web link at button 16 to, for example, a music provider. Buttons 18 enable a user to select a CD and / or track for shuffle playback. A display 20 provides such information as time remaining for a CD or for the current song or lapse time for the current CD or song. In addition, the display 20 can provide information such as the name of the CD, the artist, and the song. Gauge
30 22 provides a pictorial representation of the volume. By clicking on the gauge 22, the user can instantly change the volume of the universal player. Alternatively

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volume control 40 allows a user to adjust the volume. Buttons 24 allow a user to select track and / or CD for a loop mode.

At the bottom of the virtual CD player 12 are several additional controls. The first, a change mode button 26 enables a user to change modes. As with real
5 CD players, a pause button 28 and a play button 30 are provided. The front of the CD tray 32 serves as a reject button. In addition, rewind 34 and fast forward 36 controls are also provided. Finally, a download command button 38 is provided, to initiate downloading of a music file.

While audio files may be stored at different locations and on different
10 storage media, such as hard drives, removable disc drives such as Iomega's Zip (TM) or Jaz (TM) drive, and CD-ROMs, all virtual CDs 14A have a similar appearance, regardless of actual location. When a user selects a particular CD 14A, the corresponding audio file is located.

The selected audio file is played back using any playback system which is
15 available on the user's computer. The virtual player 12 of the present invention integrates with commercially available playback systems such as Liquid Audio Player (TM), Real Player (TM), Shockwave (TM), etc. Thus, users only need the player 12 of the present invention as their primary interface for playing music.

As Fig. 2B illustrates, clicking on CD case 14A opens the case and reveals
20 the virtual CD 14B therein. The corresponding file, which resides somewhere in storage, either on the user's computer, or possibly on a different computer, is located.

As the sequence of Figs. 3A-3E demonstrates, when a user clicks on an exposed virtual CD 14B, the tray, or CD holder, 32 opens. The CD 14B lifts up
25 from the jewel case 14A and moves to the tray 32. During this transition, the actual file is loaded from its location in storage. The tray 32 closes and the loaded audio file begins to play automatically. Animation provides a smooth, realistic opening and closing of the tray 32, and a smooth glide of the CD 14B to the tray 32, but one skilled in the art would recognize that animation is not necessary to convey a sense
30 of the operation to a user.

The virtual CD player 12 operates much the same way as an actual CD player or deck, giving the user the ability to play an entire CD, selected tracks,

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random tracks, loop, pause, skip, adjust the volume, and eject a disc from the tray
32.

A playback activator 513 (Fig. 1) selects and activates a playback system 515 the user has in resident memory which is appropriate for the file format of the particular selection about to be played. If there is no playback system in memory, the player will activate its own playback capabilities. Thus, users can easily collect music digitally and play back the music because the present invention associates music, other audio, files to playback mechanisms regardless of how the files are encrypted or where they are stored. In a sense, the playback activator 513 acts as an interpreter when a user has a combination of incompatible playback and encryption formats.

When a user clicks on the booklet 14C inside the case 14A, "liner notes" are displayed. As illustrated in Fig. 4A, the first screen provides a numerical list of all of the tracks on the CD. In addition, the cover art 52 is displayed. Note that the player 12 is still displayed and that play of a CD continues while the liner notes are displayed.

Navigation buttons are provided with the liner notes. Clicking on the "next" or right arrow 44 scrolls further into the liner note pages, as exemplified by Figs. 4B-4F. Clicking on the "previous" or left arrow 46 scrolls to the previous page. In Fig. 4A, there is no previous page, so the left arrow 46 is dimmed. Clicking on the home button 48 returns to the first page of the liner notes (Fig. 4A), and clicking on the X button 50 returns to the main screen such as that shown in Fig. 3E.

Thus, for the particular CD shown in this example, for each click of the right arrow button 44, a user is presented first with a first review 54 of the album in Fig. 4B, a second review 56 in Fig. 4C, the artist's resume 58 in Fig. 4D, which can include for example personal information, career summary and contact information.

As shown in Fig. 4E, further clicking on the right button 44 provides an extensive biography 60A-60F of the artist.

Finally, clicking on the right button 44 again provides a selected discography 62 of the artist, as seen in Fig. 4F.

Figs. 5A-15 illustrate an another embodiment 100 of the present invention.

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Fig. 5A illustrates a virtual CD player 110 with a 6-CD changer, which corresponds with the virtual player 503 of Fig. 1, with all of its accompanying controls and indicators. A first virtual rack, or spinner 120, displays all music owned by or accessible to the user, i.e., "virtual" CDs, which includes, for example, physical CDs, music stored on hard disks and removable media, data streams, and downloadable music stored at a music server. An icon, preferably comprising the cover art of a CD, represents the CD.

Display 102 indicates which positions in the 6-CD changer are occupied. Preferably these are color coded and shaded. For example, a shaded number indicates that the corresponding position in the tray is empty. A green colored number may indicate the presence of a CD in the corresponding holder position. Finally a red colored number indicates the CD which is currently playing. When the user rolls the cursor over the numbers, a description of the CD corresponding to the number pops up. Clicking on a number causes the corresponding CD to start playing.

Bar 175 indicates elapsed time for the playing song. The user can click anywhere on this graph to move the current point of play.

The cover of the currently playing CD is displayed at 170.

A user can view his virtual CDs in the spinner 120, for example, by title, artist or genre by clicking on one of the tabs at view control 126. The title, artist, or genre is displayed in the spinner selection display 122.

Clicking on arrows 124A and 124B cause the spinner to scroll through the various genre categories available, or titles or artists depending on the selected view.

If more than six virtual CDs are in the category, for example, clicking on arrows 128A or 128B causes an animation in which the spinner 120 appears to rotate, to display additional CDs in the category.

Clicking on clasp 127 causes the spinner 120 to collapse out of view. If the spinner is collapsed, then clicking on the clasp 127 causes it to re-appear.

A CD is made available for playing simply by dragging the cover to the desktop area 140. This is equivalent to taking a physical CD out of a rack and leaving it on the table next to the stereo, where a user's favorite or commonly played CDs frequently end up for an extended time. Alternatively, the user can simply

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click on a CD which is visible within an open case, and the CD moves to the virtual player.

One skilled in the art would recognize that this same type of real-world object manipulation can be performed for other types of media such as DVDs, video
5 tapes, CD-ROMs, etc.

A second spinner 130 is similar to the first, but displays user-defined display lists, or compilations. A compilation is created by dragging and dropping a CD or song from the desktop 140 or from the first spinner 120, or an existing compilation from the compilation spinner 130, into an unoccupied space 131 in the compilation
10 spinner 130. Individual songs from a CD are displayed by clicking on a CD, and can then be dragged and dropped.

A user can then add to a compilation by dragging and dropping additional music, that is, individual songs, virtual CDs, compilations, tracks from physical CDs, into the newly created compilation.

15 For example, a user can create a custom playlist or compilation that fits on his portable digital audio product or other secure removable storage, such as an MP3 player, and copy the music or compilation to the device.

Custom graphics can be designated as the background for the desktop area 140. The desktop area 140 can thus be customized for a particular music provider or
20 other vendor that provides the universal player to a user. For example, a provider could place its logo in the desktop area 140.

Fig. 5B illustrates the meta data draw 171. When the user clicks on this draw 171 the draw 171 opens to expose the cover art 172 of the CD currently in play.

25 As Fig. 5C illustrates, from time to time, the meta data draw 171 may pop open to display an advertisement 173, on which the user can click to obtain additional information.

Fig. 6A illustrates the dragging of a visual CD 132 to compilation rack 130. If the user drops the visual object 132 into position 134, which is already occupied,
30 then visual CD 132 will be added to the compilation existing in position 134. If, on the other hand, visual object 132 is dropped into empty position 136, a new compilation 136 is created, containing the contents of visual object 132.

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Fig. 6B illustrates dragging a particularly selection 140 to a compilation 142. As the user drags the selection 144 to the compilation 142, a line 145 appears, designating the position where the selection 144 will be inserted if it is dropped at that moment. By moving the selection 144, the insertion line 145 moves
5 accordingly.

Similarly, Fig. 6C demonstrates that a visual object such as CD 150 can also be dropped into a compilation 152. Again, a line 154 indicates the current insertion point.

As illustrated in Fig. 6D, the user can assign a name 200 to a compilation
10 and select art for the compilations's cover from a library of pictures, either supplied as part of the present invention, or created by the user himself, or purchased as part of clip art collection, etc.

Three buttons 162, 164, 166 are available on the compilation 160. "Select Artwork" 162 allows a user to select artwork from a library provided by the
15 universal player. "Select From File" 164, allows the user to select a picture from a file stored on disk or some other location. Finally, "Paste From Clipboard" 166 allows a user to paste a picture or graphic previously copied to the clipboard.

Fig. 6E illustrates a selection 168 of art that might be available when the user selects from the "Select From File" button 164 of Fig. 6D.

20 As with virtual CDs in the virtual CD spinner 120 (Fig. 5A), compilations in the compilation spinner 130 may be displayed by category, for example, by title or compilation date.

Fig. 7 illustrates that opening a virtual CD or compilation, by clicking on the cover, displays its musical contents 210. Different selections, i.e., tracks or songs,
25 can originate from different sources, as shown by the various statuses 212. As shown, all songs are stored on a hard disk, but CDs, records, tapes, data streams, etc. can also be represented. Each track's title 214 and duration 216 is displayed.

An icon 217 is displayed in the top right corner to indicate the genre. The track currently playing is highlighted 211. Clicking on another track causes the
30 other track to start playing. In addition, to create a compilation, the user can grab one or more tracks and drag them to the compilation rack as discussed above. A "Select All" button 218 allows a user to select all songs displayed with one click. A

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“More” button 219 requests more information on the selection. This information is obtained, for example, from a music provider over the Internet. A “Record” button 215 allows the user to record onto his hard disk the currently playing selection, which may be an audio stream, for example, or a physical CD track.

5 Fig. 8 illustrates that the song/album database may be displayed in a more typical “list” fashion, sorted, for example, by song, album, artist or genre. Just those songs currently in the virtual CD player can be shown, or all songs can be shown. This screen is selected by clicking on the Song Library button 223.

 For example, the list interface 220 provides the choices of searching for files
10 in the player 110, or all songs to which the user has access. In addition, various tabs exist to list by song, by album or CD, by artist or by genre. Here, the song tab has been selected and the list displays selections by song title. Of course other combinations and sorting of the CD data are possible, as would be obvious to one skilled in the art. A status window 222 provides additional status for a selected line.
15 A particular selection 221 can be selected by the user, in which case it is highlighted and selected by the player.

 For physical CDs owned by the user, the user can input the physical location where the CD is physically stored. Upon placing the CD in the computer’s CD-ROM drive, the CD appears on the desktop, having similar appearance to the virtual
20 CDs.

 As illustrated in Fig. 9, there can actually two or more databases or storage systems. At the user’s location 400, the user of the virtual player 500 typically has his own local storage, as described above with respect to Fig. 1A. A local database 235A keeps track of all music which the user either owns or has access to, and the
25 location of each music file.

 In addition, the player 500 communicates with a music provider or vendor 537 at a remote site 410 over a network such as the Internet 535. The music provider 238 also has storage 240 on which CDs and other audio files 242 are stored. The music provider 537 can also maintain a data records 235B - 235N for
30 each user. Here, record 235B corresponds to the database 235A for the user shown, while records 235C-235N correspond to other users. The database record 235B includes any selections the user has made on line, as well as use statistics, described

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below. The player virtual 500 thus maintains this use information locally and uploads this information to the music provider 537 when connecting to the music provider 537. Thus, each user's preferences can be tracked both locally and by the music provider 537.

5 As Fig. 10 illustrates, the player 110 of the embodiment 100 is a 6-CD changer. Like the single CD player described previously, a CD is placed into the CD changer by dragging and dropping the CD into or onto the changer. This changer, like the real 6-CD changer it emulates, can hold up to 6 CDs and/or compilations in its tray 250, thus allowing the user to program an entire day's worth
10 or more of music.

A user can drag and drop CDs and compilations onto the tray 250 to, for example, shuffle an album or CD, shuffle a user-defined compilation, or shuffle all compilations and CDs in the changer.

In the center 251 of the tray 250 are numbers corresponding to each location.
15 These numbers are color coded in the same manner as the numbers in panel 102 as discussed previously with respect Fig. 5A.

It is also noteworthy that a visual CD can be opened in a rack as well as in the desktop area. For example, visual CD 252 has been opened and its CD, which is currently in the tray 250, is not shown in the case. Visual CD 254 is also opened,
20 however, the CD appears in the case.

Note also that several of the CDs in the tray such as CD 256 have a "V" for "virtual". CD 256 represents a virtual media object, that is, one which exists in files in storage. Another disc 258 has "C" on it, for "compilation". Not shown, a CD which represents a physical CD in, for example, a CD-ROM player, would have a
25 "R" for "real".

Of course, one skilled in the art would recognize that other configurations are also possible. For example, 100-CD "juke-box" players are available and could easily be emulated.

In one embodiment, the dragging and dropping of a CD or compilation into
30 the CD player results in an animation, again emulating real life, in which an image of a CD moves from the cover art or jewel box to an empty slot in the changer. If there are no empty slots, one of the CDs currently in the tray 250 is removed. The

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6-CD tray 250 itself rotates like a real 6-CD changer, bringing a particular CD to the forefront .

As Fig. 11 shows, an embodiment of the present invention can connect to a specific music vendor. Using a searcher 180, a user can search for certain music by
5 artist, album, or other selection criteria. The user can search, for example, for CDs, DVDs, or digital tracks. The user may then purchase the music from the music vendor by selecting various albums, which are then placed in the buylist 181.

Alternatively, as Fig. 12 shows, selected items can be placed into a virtual shopping basket 182.

10 Fig. 13 illustrates a screen displaying a monthly music guide 260, which is displayed when a user clicks on a Monthly Preview tab 160 (Fig. 5A). Each month, a predetermined number of CDs are suggested, based on net perception by the music provider 238. The music guide 260 can offer special promotions and features. Buttons (not shown) are provided which allow the user to add the displayed album
15 to the shopping cart 182 (Fig. 12), to an on-line registry, or to the buy list 181 (Fig. 11). The guide 260 provides additional information when, for example, the user clicks on a picture 262 of the artist. Such additional information can include cover art, liner notes, and even concert dates for the recording artist, as well as trailers (similar to movie trailers), track samples and reviews. Of course, the guide could as
20 easily be a weekly or daily guide, or could be updated according to some other period, or irregularly.

Fig. 14 is an alternate preview guide, which appears when the user clicks on the monthly-preview tab 160. A selection of CDs 161 is displayed along with a
25 button 162 for each CD. For example, clicking on a button 162 allows the user to download sample tracks. A featured album can be displayed in more detail on the main screen 163. Indicator 164 indicates the current month, and allows a user scroll through previous months as well. The screen 163 can offer multi-media promotional information including animation, music, streaming video.

Fig. 15 illustrates the Rock-dot-community menu screen 270, which is
30 displayed when the user clicks on the corresponding button 164 (Fig. 5A). Links 272 provide two-way communication with a site and provides links to digital downloads, auctions, and music and other content. A "yellow pages" link 274

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retrieves a yellow pages service which includes links to over 300,000 music-related sites, and which can be customized for a particular user based on that user's interests.

Fig. 16 illustrates a radio/video screen 360 with net-radio 302 and net-video playback screen 304, which appears up when the user clicks on tab 162. The user can find and bookmark his favorite streamed content, whether audio or video, including stills, on the Internet. The player is capable of using popular audio and video formats such as Quicktime.

As with the CD racks, video rack 320 and 322 can hold and display virtual and physical video clips, music videos, and other video/audio content. Rack 320 holds user defined compilations. A desktop area 324 can hold video clips that have been selected by the user. Image 326 portrays the cover of the currently playing video.

In a preferred embodiment the video playback screen 304 adapts to the aspect ratio and size of the source video. Clicking on a video representation starts the video playing.

At least one embodiment of the virtual player collects statistical use data. This is done in one alternative, for example, at the user's system. Such data includes, for example, a list of tracks, e.g., songs, that a user samples (e.g., a 30 second sample of a track), the actual music a user purchases and which CDs and tracks a user listens to on an on-going basis after purchase. This music use data can then be used to better recommend music to the user/customer and can be sold to the record companies as marketing information for future promotions. The use data can then be sent back to a vendor, for example, over the Internet.

The data collector 533 (Fig. 1) observes user behavior to develop a unique profile for every user based on behaviors, actions and usage patterns. The following user behaviors and actions are among those captured by the present invention, although one skilled in the art would recognize that other comparable behaviors and actions could also be captured without changing the scope of the present invention:

- * online searching for music or entertainment content;
- * downloading of digital music or entertainment content;

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- * requesting of music- or entertainment-related Web pages;
 - * online purchasing of music or entertainment content;
 - * playback sessions with streamed content, such as radio or video;
 - * playback sessions with local digital and CD music; and
- 5 * declarations of personal interest, e.g., a preference for rock music but a distaste for rockabilly, heavy metal or a particular band.

The user's declaration of tastes, likes / dislikes, favorite genres, and artists etc. is captured via local interaction.

Finally, in the near future if not in the present, users will be able to play
10 music or video broadcast over the internet or other network by a "Web radio" broadcaster. Such Web radio signals comprise audio or video streams. At least one embodiment of the present invention can also be used to monitor use of Web radio in the same way it monitors the use of music files.

The present invention can thus catalog the music inventory of CDs and
15 digital music that the user owns or has downloaded as a promotion, or has downloaded from a broadcaster. Based on these characteristics, this embodiment characterizes the user to a host database over the Internet.

The local database's interaction with a host database containing the characteristics and buying patterns for all users on the system creates a customer
20 profile on the host database that is used to customize promotions, music and entertainment news and make suggestions to the user of music or entertainment content that he may enjoy listening to or purchasing. For example, if a user buys two CDs of a particular recording artist, at some later time the user will be presented with a promotion for a third CD by the same or similar artist.

25 The local database continues 235A (Fig. 10) to collect user information during each session and periodically refreshes the host database's user profile 235B (Fig. 10).

Extensible databases already exist which contain information about virtually every audio CD in print. This information can be accessed by browsing or searching
30 its web sites. But if a user needs to access information about CDs he has already

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bought, there is no direct way of making the link between the information contained on the server and the user audio CD.

An embodiment of the present invention allows a direct approach of detecting the CD owned by some user and creating the link with the server database.

- 5 Two different embodiments are described: one with user manual data entry and one with CD media identification. Both embodiments allow the user to put a physical CD into the CD-ROM drive on a computer/system, to identify the CD, and to link it to the server's database.

- 10 Once a CD has been registered, a record company, for example, will allow the user to download an electronic copy, or will verify for a retailer that the user possesses a copy, the retailer then providing an electronic version to the user.

All retail CDs have a bar code number printed on the back cover or the jewel case. The most widely used are the Universal Product Code (UPC), used mostly in North America, and the European Article Numbering (EAN).

- 15 To recognize a CD, the application prompts the user to manually enter this code into the system. Once the user has entered the code, the server searches the database using an UPC or EAN indexed table and gives back requested information about the CD to the user. Such information may include, but is not limited to, the CD cover, liner notes and track lists.

- 20 Alternatively, the user can insert the CD into the CD-ROM player of his computer and have the system automatically identify the CD.

- A preferred embodiment uses a "spider," which is a piece of search software which typically reaches out through the Web and looks at the "shape" of data, rather than analyzing the data itself. Since there is no unique identification already on an audio CD, the software uses the tracks table of contents to calculate a unique shape to distinguish between various CDs. This shape consists of a string of digits where each digit represents a specific track. The digits are calculated using, for example, timing information such as minutes, second and block of the corresponding track. To normalize the shape, the string is preferably padded or truncated to a specific number of digits.
- 25
30

Fig. 17 illustrates a simplified example. The geometry of the user's CD 310 as having various tracks A, B, C, D and so on. This is compared against a library

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312 of known CD geometries 314A - 314N. If a match is found, the user's CD 310 is identified. Of course, the actual tracks do not need to be examined, as the timing data is available in the table of contents.

When the user inserts a new CD, the database may not yet have the unique
5 shape stored. In that case, an initial user must manually identify the CD, using the search engine or the manual approach, and the shape will be stored in the database for the next user.

One skilled in the art would recognize that the techniques disclosed herein could equally be applied to other physical and virtual media, including other forms
10 of audio, video, virtual digital video/versatile discs (DVD), drawings, pictures, photographs, movies, slides, video cassettes, other CD formats such as CD-ROM, etc.

It will be apparent to those of ordinary skill in the art that methods involved in the present system for monitoring a supply chain may be embodied in a computer
15 program product that includes a computer usable medium. For example, such a computer usable medium can include a readable memory device, such as a hard drive device, a CD-ROM, a DVD-ROM, or a computer diskette, having computer readable program code segments stored thereon. The computer readable medium can also include a communications or transmission medium, such as a bus or a
20 communications link, either optical, wired, or wireless, having program code segments carried thereon as digital or analog data signals.

While this invention has been particularly shown and described with references to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without
25 departing from the scope of the invention encompassed by the appended claims. For example, while reference has been made to computers, the present invention is equally applicable to other devices such as set top boxes, internet appliances and gaming consoles.

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CLAIMS

1. A universal player, comprising:
 - a virtual player which emulates visually and functionally a physical media player;
 - 5 a media object display in which media objects owned by or accessible to a user are displayed;
 - an animator which visually emulates loading a media object from the media object display onto the virtual media player responsive to a user command;
 - 10 a loader which loads a media object file associated with the selected media object, responsive to the user command; and
 - a playback activator which selects playback software appropriate for the loaded file's format and for activating the selected playback software to play the loaded media object file.
- 15 2. The universal player of Claim 1, wherein a media object comprises a virtual compact disc (CD).
3. The universal player of Claim 1, wherein a media object comprises at least one track from a virtual CD.
4. The universal player of Claim 1, further comprising:
 - 20 a desktop area in which available media objects are displayed, each media object having the appearance of being contained in a container.
5. The universal player of Claim 1, further comprising:
 - a catalog of media objects owned by or accessible to a user, wherein the media object display displays media objects referenced in the catalog.

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6. The universal player of Claim 1, wherein a virtual medium is a virtual compact disc (CD) and the virtual media player has the appearance and functionality of a real CD player.
7. The universal player of Claim 6, wherein a container has the appearance of a jewel case.
8. The universal player of Claim 6, wherein the virtual media player comprises a tray which holds a single media object.
9. The universal player of Claim 1, wherein the virtual media player comprises a rotatable tray which holds up to a predetermined number of media objects.
- 10 10. The universal player of Claim 1, wherein the virtual media player a virtual magazine which holds up to a predetermined number of media objects.
11. The universal player of Claim 1, wherein the virtual media player comprises a rotatable, jukebox-style media holder which holds up to a predetermined number of media objects.
- 15 12. The universal player of Claim 1, wherein a media object file is represented by a case icon which is independent of where the media object file is stored.
13. The universal player of Claim 12, wherein a media object file is stored in any of memory, hard drive, and removable drive.
14. The universal player of Claim 1, wherein, upon clicking by a user on a container, the container opens, revealing the media object therein.
- 20 15. The universal player of Claim 14, wherein an open container reveals a booklet, such that when a user clicks on the booklet, liner notes are displayed.

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16. The universal player of Claim 15, wherein a media object is a virtual CD, and liner notes comprise a list of all tracks on the virtual CD.
17. The universal player of Claim 15, wherein liner notes comprise reviews.
18. The universal player of Claim 17, wherein reviews are with respect to at least one artist.
19. The universal player of Claim 17, wherein reviews are with respect to the instant media object.
20. The universal player of Claim 15, wherein liner notes comprise an artist resume.
21. The universal player of Claim 15, wherein liner notes comprise an artist biography.
22. The universal player of Claim 15, wherein liner notes comprise a discography.
23. The universal player of Claim 15, wherein liner notes comprise cover art.
24. The universal player of Claim 15, wherein liner notes comprise at least one picture associated with the instant media object.
25. The universal player of Claim 1 wherein the media object file contains audio information.
26. The universal player of Claim 25 wherein a media object file format is MP3.
27. The universal player of Claim 25 wherein a media object file format is Quicktime.

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28. The universal player of Claim 1 wherein the media object file contains music.
29. The universal player of Claim 1 wherein the media object file contains video information.
- 5 30. The universal player of Claim 1, further comprising an information display for displaying information about the playing media object file.
31. The universal player of Claim 30, wherein the information comprises at least one name of an artist associated with the playing media object file.
32. The universal player of Claim 30, wherein the information comprises a title
10 of a song being played.
33. The universal player of Claim 30, wherein the information comprises elapsed time.
34. The universal player of Claim 1, wherein upon clicking on an exposed media object, the media object holder is opened, and the media object is visually
15 loaded onto the media object holder.
35. The universal player of Claim 34, wherein after the media object is loaded onto the media object holder, the media object holder closes and the file automatically begins to play a media object file associated with the media object.
- 20 36. The universal player of Claim 34, wherein the animator animates a smooth transition of loading the media object onto the media object holder.
37. The universal player of Claim 1, further comprising:

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a downloader which downloads media object files from a provider;
and

a librarian which stores downloaded media object files and maintains
references to their stored locations.

- 5 38. The universal player of Claim 37, wherein the downloaded media object files
are purchased by a user.
39. The universal player of Claim 1, further comprising:
a Web-receiver which receives streams from a Web broadcaster.
40. The universal player of Claim 39, wherein a stream is a Web-radio stream.
- 10 41. The universal player of Claim 39, wherein a stream is a video stream.
42. The universal player of Claim 1 further comprising:
means for recording music from a CD player.
43. The universal player of Claim 1, wherein the media object display comprises
a virtual rack for holding at least one media object.
- 15 44. The universal player of Claim 43, further comprising:
means for allowing a user to move a media object from the virtual
rack.
45. The universal player of Claim 43, wherein the virtual rack displays media
objects according to a selected category.
- 20 46. The universal player of Claim 45, wherein the selected category is genre.
47. The universal player of Claim 45, wherein the selected category is artist.

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48. The universal player of Claim 45, wherein the selected category is title
49. The universal player of Claim 45, wherein the selected category is displayed on the virtual rack.
50. The universal player of Claim 43, wherein the virtual rack displays media
5 objects owned by or accessible to a current user.
51. The universal player of Claim 43, wherein the virtual rack emulates a spinner, which a user can cause to spin to scroll through a selected category.
52. The universal player of Claim 1, further comprising:
means for allowing a user to define at least one compilation, a
10 compilation comprising at least one media object, wherein the compilation appears and behaves as a media object.
53. The universal player of Claim 1, further comprising:
a virtual rack,
wherein dragging a first selection to an empty slot in the
15 compilation rack creates a compilation comprising the first media object, and
wherein dragging a subsequent selection to the compilation adds the media selection the compilation.
54. The universal player of Claim 53, wherein the first and subsequent selections
20 each comprise any of a media collection, a selected portion of a media collection or another existing compilation.
55. The universal player of Claim 53, wherein upon a user clicking on a media object, contents of the media object are displayed.

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56. The universal player of Claim 55, wherein the contents are displayed as a list.
57. The universal player of Claim 55, wherein status of the media object is displayed.
- 5 58. The universal player of Claim 57, wherein status comprises a source from which the media object was obtained.
59. The universal player of Claim 1, wherein a media object is a virtual digital video disc (DVD) and the virtual media player has the appearance and functionality of a real DVD player.
- 10 60. The universal player of Claim 1, further comprising:
a data collector which collects statistical data about a user's use.
61. The universal player of Claim 60, wherein the statistical data comprises a list of purchased music.
62. The universal player of Claim 60, wherein the statistical data is responsive to
15 the user's use history.
63. The universal player of Claim 62, wherein the user's use history comprises a list of sampled selections downloaded from a provider.
64. The universal player of Claim 62, wherein the user's use history is responsive to the user's playback of any of media or selections.
- 20 65. The universal player of Claim 62, wherein the user's use history is responsive to selections received via Web radio.

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66. The universal player of Claim 60, wherein the data collector further comprises:
a transmitter which sends the collected statistical data to a vendor.
- 5 67 The universal player of Claim 66, wherein the vendor offers the user a special promotion based on the collected data.
68. The universal player of Claim 66, wherein the vendor recommends music to the user responsive to the collected data.
69. The universal player of Claim 1, further comprising:
means for playing back a physical CD; and
10 a CD identifier which identifies a physical CD being played back.
70. The universal player of Claim 69, wherein the CD identifier comprises:
means for entering an identification code which identifies the CD.
71. The universal player of Claim 69, wherein the CD identifier comprises:
a software spider which examines the shape of data on the CD and
15 compares the shape against a database of CD data shapes. identification of the CD being responsive to the comparison.
72. The universal player of Claim 71, wherein the shape of data comprises timing information.
73. The universal player of Claim 69, wherein the CD is registered with the
20 universal player system's database by the librarian.
74. The universal player of Claim 69, wherein the CD is registered in a vendor's database.
75. The universal player of Claim 1, further comprising:

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a vendor searcher which allows the user to search for media in the vendors's database; and

a virtual shopping basket which displays the user's purchase selections.

5 76. The universal player of Claim 1, further comprising:

 a preview guide displayer which displays a preview guide which is downloaded from a vendor upon a request by the user, the preview guide being periodically updated by the vendor.

10 77. The universal player of Claim 76, wherein the preview guide is customized by the vendor responsive to user use statistical data.

78. The universal player of Claim 77, wherein customization of the preview guide comprises promotion offers.

15 79. The universal player of Claim 76, wherein the preview guide comprises any of a picture of a featured artist, cover art, liner notes, concert dates for the artist, trailers, track samples, and reviews.

80. The universal player of Claim 1, further comprising:
 a community screen for providing links to related Web sites.

20 81. The universal player of Claim 80, wherein the community screen comprises:
 customizable yellow pages providing searchable links to related Web sites.

82. The universal player of Claim 1, further comprising:
 a viewer for viewing videos.

83. The universal player of Claim 1, further comprising:

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a virtual receiver which receives and plays Web broadcasts, the virtual receiver having the appearance and functionality of a real receiver; and

5 a librarian which stores a portion of the received broadcast and maintains references to their stored locations.

84. The universal player of Claim 1, wherein the virtual receiver is a virtual radio receiver and the Web broadcasts comprise an audio stream.

85. The universal player of Claim 1, wherein the virtual receiver is a virtual television receiver and the Web broadcasts comprise streaming video.

10 86. A method for maintaining and playing a collection of media objects, comprising:
providing a virtual player having the appearance and functionality of a real media player;
displaying media objects owned by or accessible to a user are
15 displayed;
visually emulating loading a displayed media object onto the virtual media player responsive to a user command;
loading a media object file corresponding to the selected media object, responsive to the user command; and
20 selecting playback software appropriate for the loaded media object file's format.

87. The method of Claim 86, further comprising:
activating the selected playback software to play the loaded media object file.

25 88. A computer program product for maintaining and playing a collection of media objects, the computer program product comprising a computer usable

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medium having computer readable code thereon, including program code which:

provides a virtual player having the appearance and functionality of a real media player;

5 displays media objects owned by or accessible to a user are displayed;

visually emulates loading a displayed media object onto the virtual media player responsive to a user command;

10 loads a media object file corresponding to the selected media object, responsive to the user command; and

selects playback software appropriate for the loaded media object file's format.

89. A computer system comprising:

a processor;

15 a memory system connected to the processor; and

a computer program, in the memory, which:

provides a virtual player having the appearance and functionality of a real media player;

20 displays media objects owned by or accessible to a user are displayed;

visually emulates loading a displayed media object onto the virtual media player responsive to a user command;

loads a media object file corresponding to the selected media object, responsive to the user command; and

25 selects playback software appropriate for the loaded media object file's format.

90. A computer data signal embodied in a carrier wave for maintaining and playing a collection of media objects, comprising:

30 program code for providing a virtual player having the appearance and functionality of a real media player;

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program code for displaying media objects owned by or accessible to a user are displayed;

program code for visually emulating loading a displayed media object onto the virtual media player responsive to a user command;

5 program code for loading a media object file corresponding to the selected media object, responsive to the user command; and

program code for selecting playback software appropriate for the loaded media object file's format.

91. A system for displaying, on a processor display, a collection of media,
10 comprising:

a media object organizer,

wherein dragging a first selection to an empty slot in the media object organizer creates a compilation comprising the first selection, and

15 wherein dragging a subsequent selection to the compilation adds the selection to the second existing compilation.

92. A system for displaying a collection of media as claimed in Claim 91, wherein media include at least one of text files, drawings, music, videos and photos.

20 93. A system for displaying a collection of media as claimed in Claim 91, wherein the collection is sorted by category.

94. A system for displaying a collection of media is claimed in Claim 91, wherein the media object organizer is a virtual rack.

25 95. A computer program product for displaying a collection of media objects, the computer program product comprising a computer usable medium having computer readable code thereon, including program code which:
provides a media object organizer;

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creates a compilation when a user drags a first selection to an empty slot in the media object organizer, the compilation comprising the first selection; and

5 adds a subsequent selection to the compilation when the user drags the subsequent selection to the compilation.

96. A method, in a processor, for defining a compilation of media objects, each media object representing at least one media object file, comprising:

10 creating a compilation upon a user dragging and dropping an icon representing a media object into an empty position in a virtual rack, such that a reference to the media object file represented by the icon is associated with the compilation;

creating an icon associated with the compilation and placing the icon in the virtual rack;

15 adding to the compilation, upon a user dragging and dropping a second icon representing a second media object onto the icon associated with the compilation, such that references to media object files represented by the second icon are associated with the compilation.

97. The method of Claim 96, wherein media object files are audio files.

98. The method of Claim 97, further comprising:

20 copying the media object files associated with a compilation to a portable digital audio device.

99. The method of Claim 97, further comprising:

copying the media object files associated with a compilation to a compact disc (CD).

25 100. The method of Claim 96, further comprising:

assigning a title to a compilation responsive to a user's specification.

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101. The method of Claim 96, further comprising:
associating a picture to a compilation's associated icon, responsive
to a user's specification.
102. The method of Claim 96, further comprising:
5 saving a list of references associated with a compilation in a storage
device.
103. The method of Claim 96, further comprising:
displaying representations of the media object files associated with a
compilation in an order specified by a user.
- 10 104. The method of Claim 103, wherein the representations are icons.
105. The method of Claim 103, wherein the representations are displayed in order
by title.
106. The method of Claim 103, wherein the representations are displayed in order
by compilation date.
- 15 107. A computer program product for identifying a physical media object, the
computer program product comprising a computer usable medium having
computer readable code thereon, including program code which:
examines data characteristics of data on the physical media object;
compares the data characteristics against a database of physical media
20 object data characteristics; and
identifies the physical media object responsive to the step of
comparing.

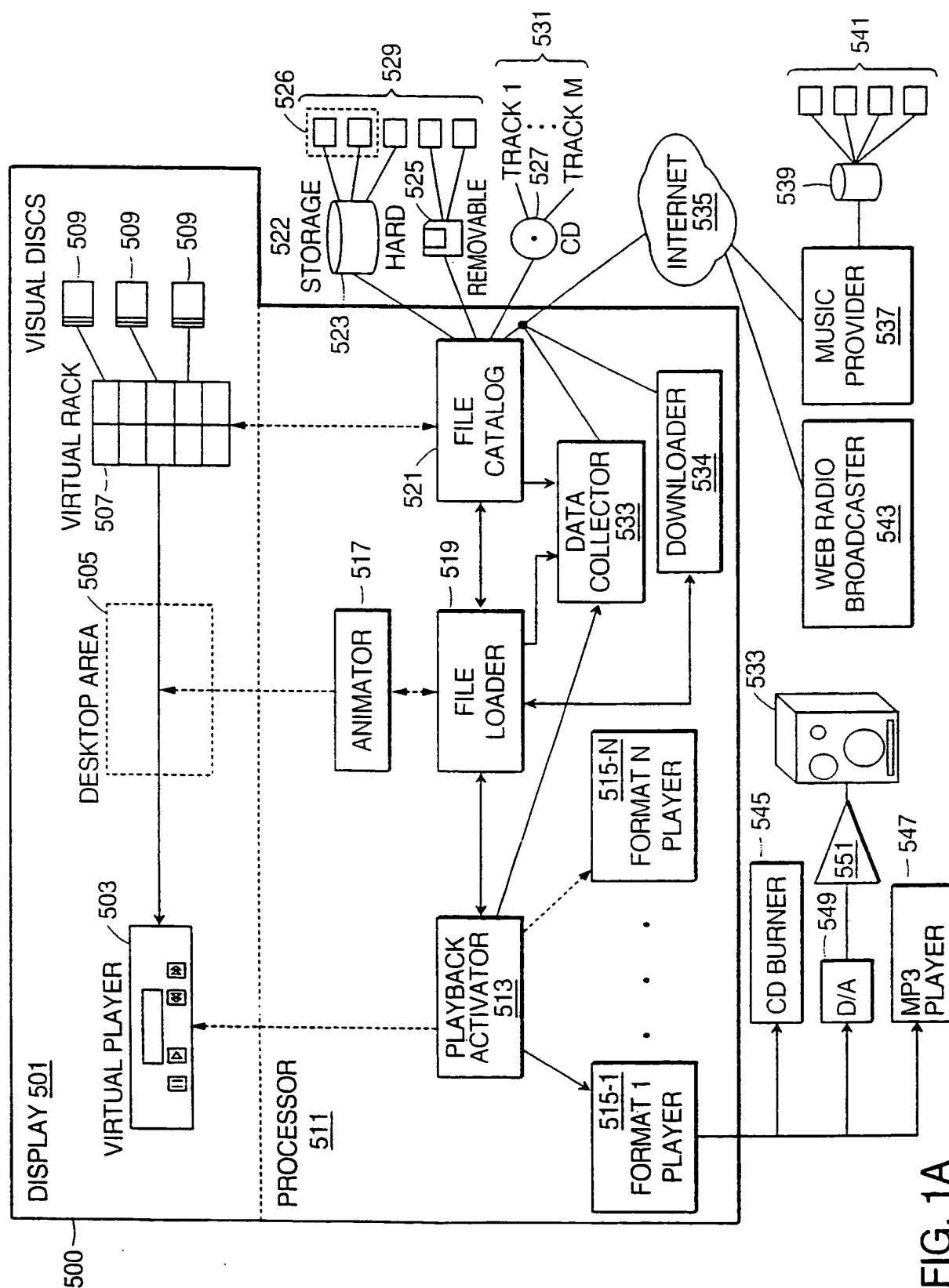


FIG. 1A

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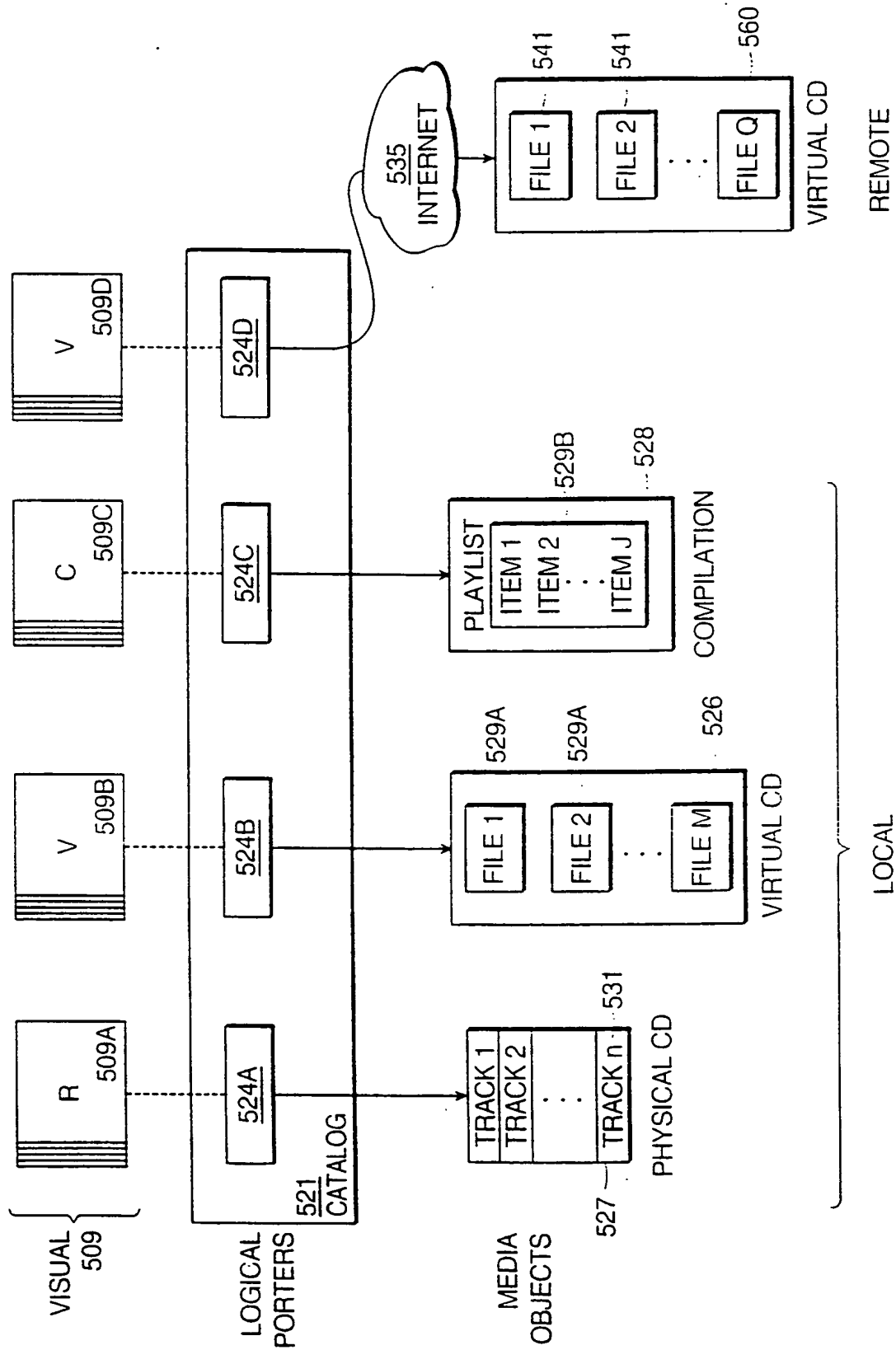


FIG. 1B

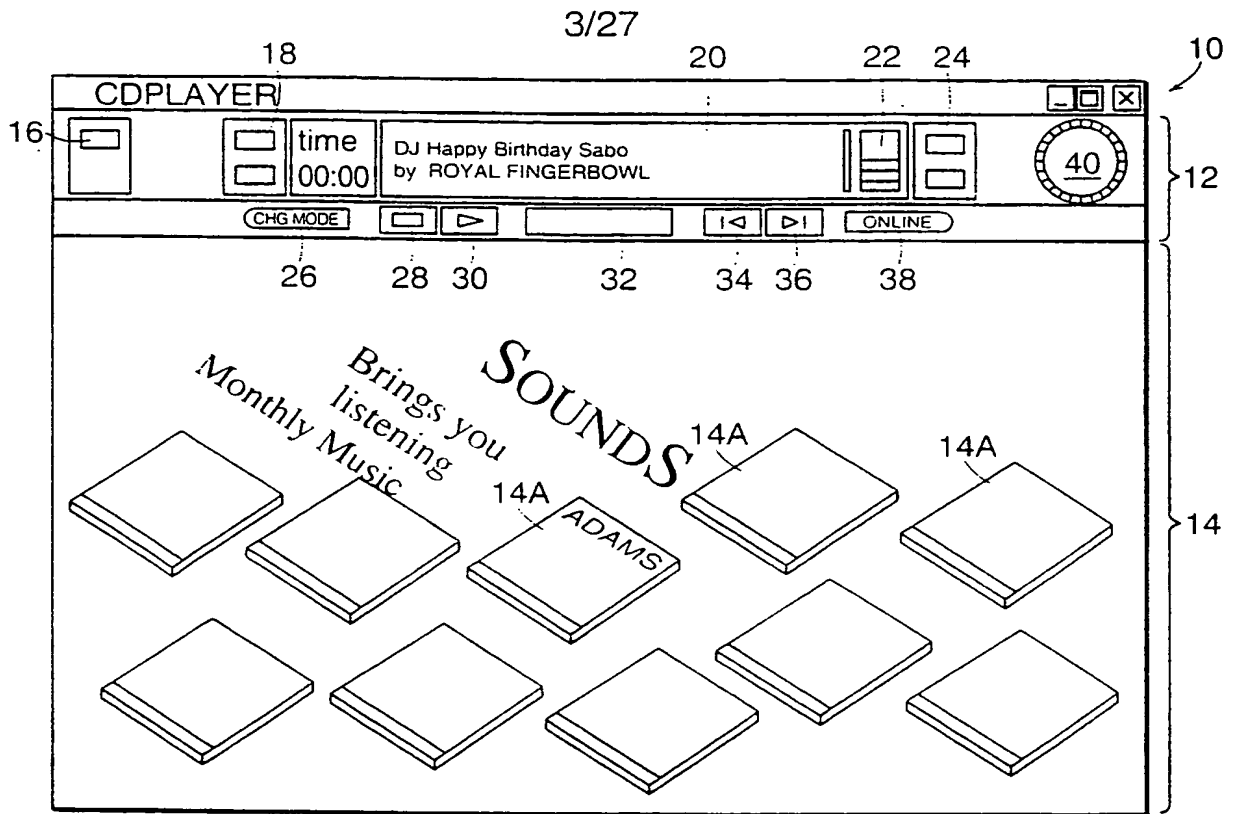


FIG. 2A

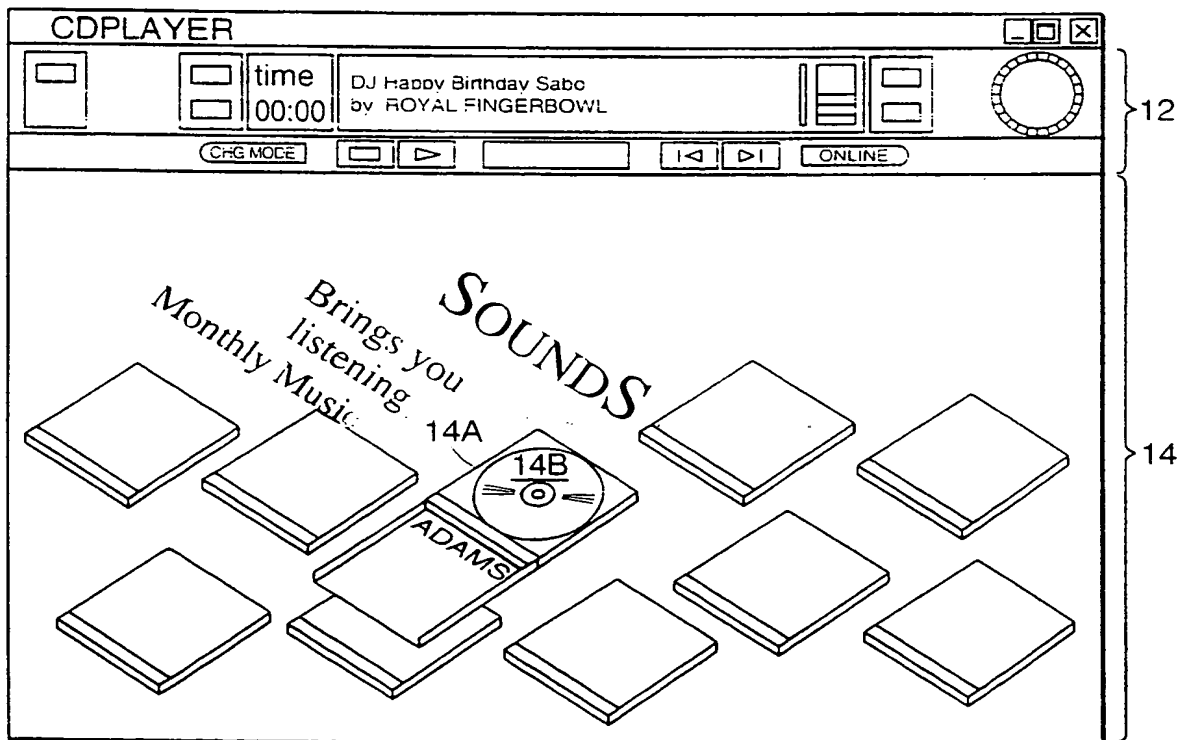


FIG. 2B

SUBSTITUTE SHEET (RULE 26)

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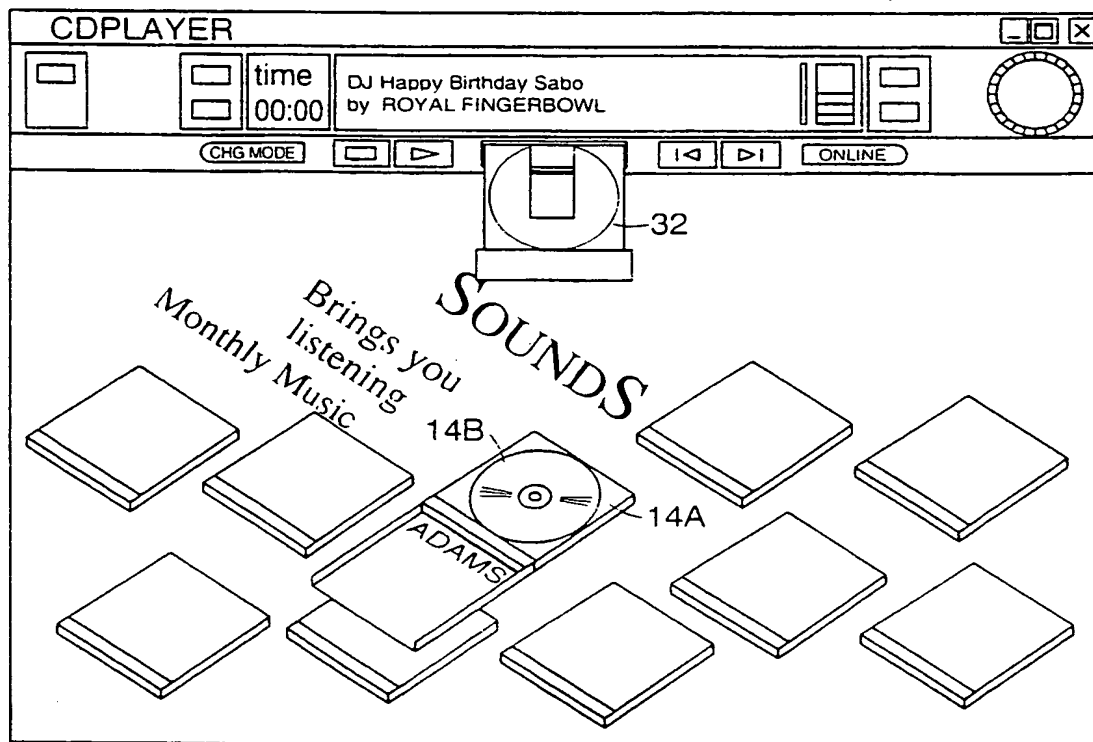


FIG. 3A

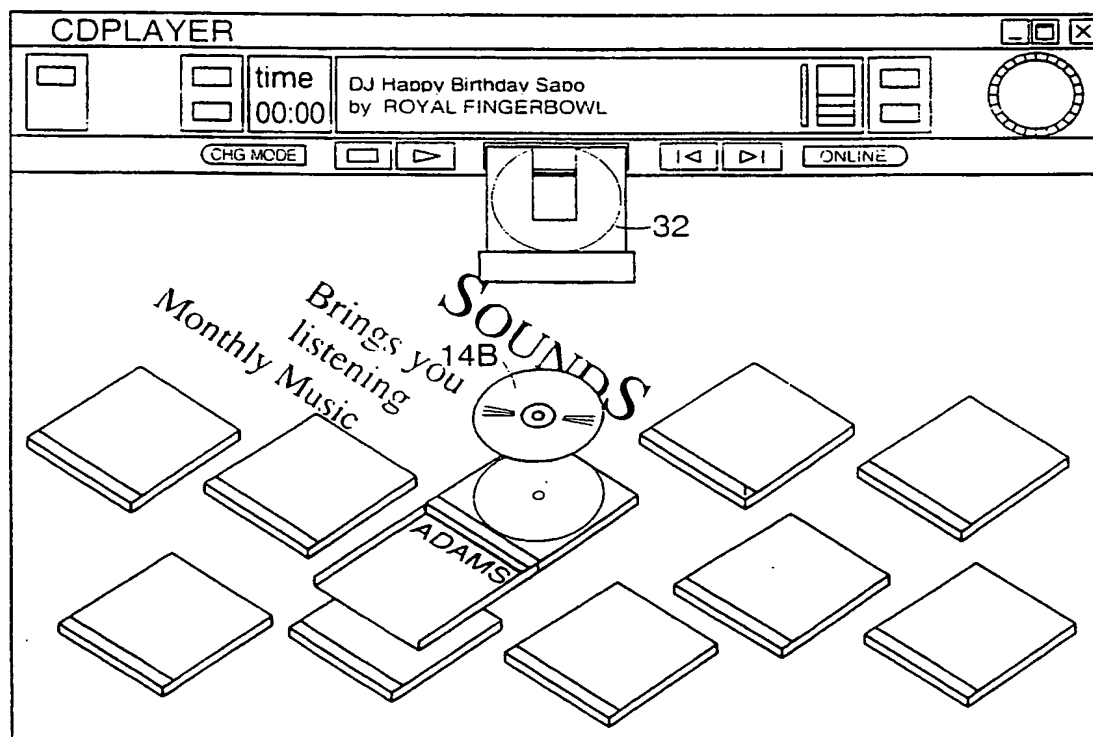


FIG. 3B

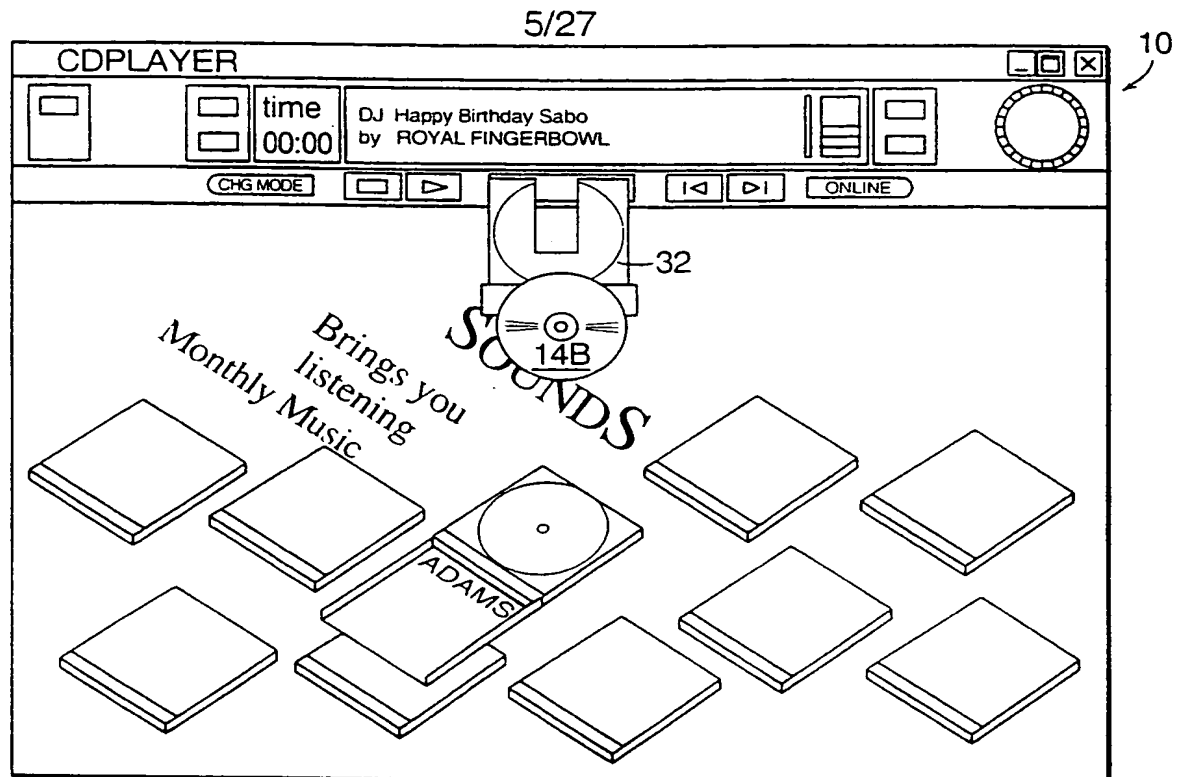


FIG. 3C

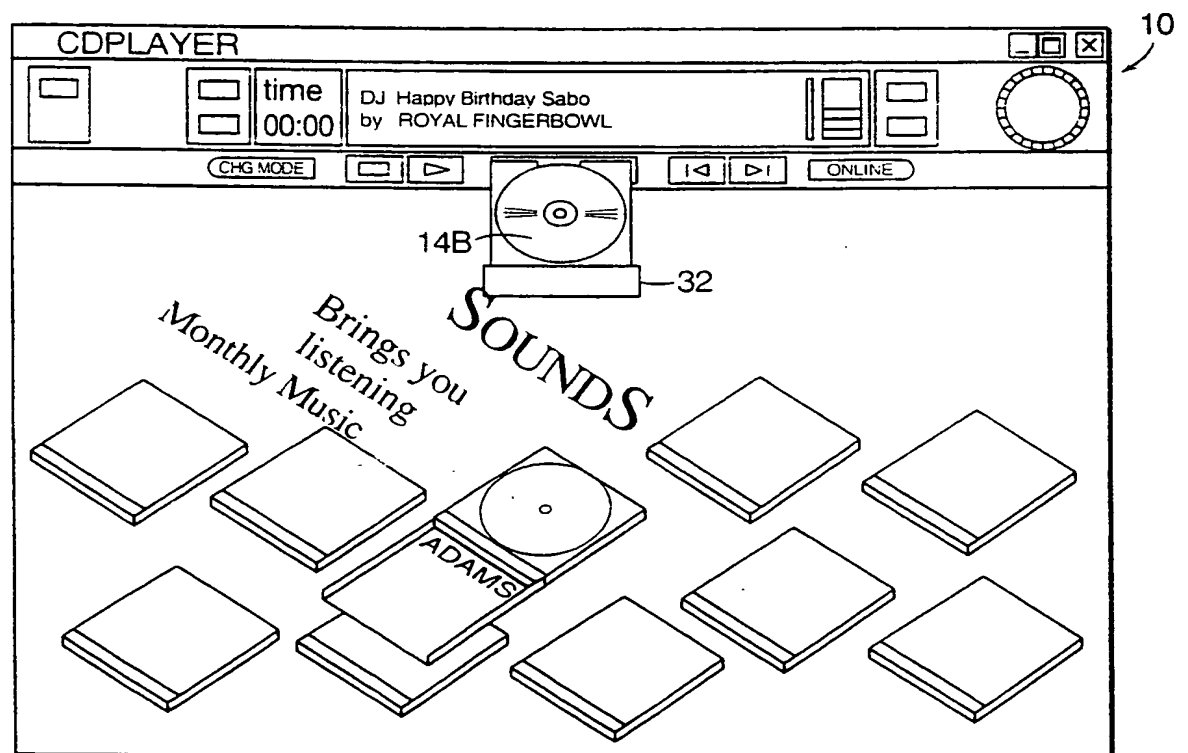


FIG. 3D

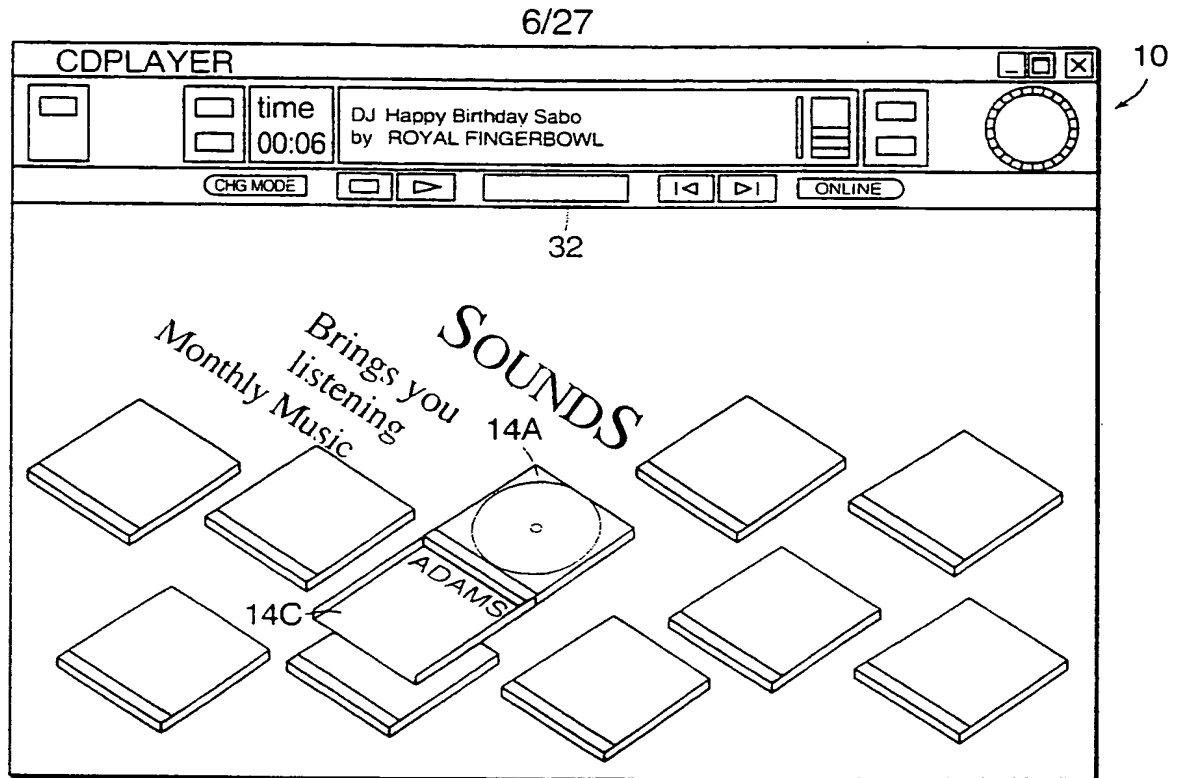


FIG. 3E

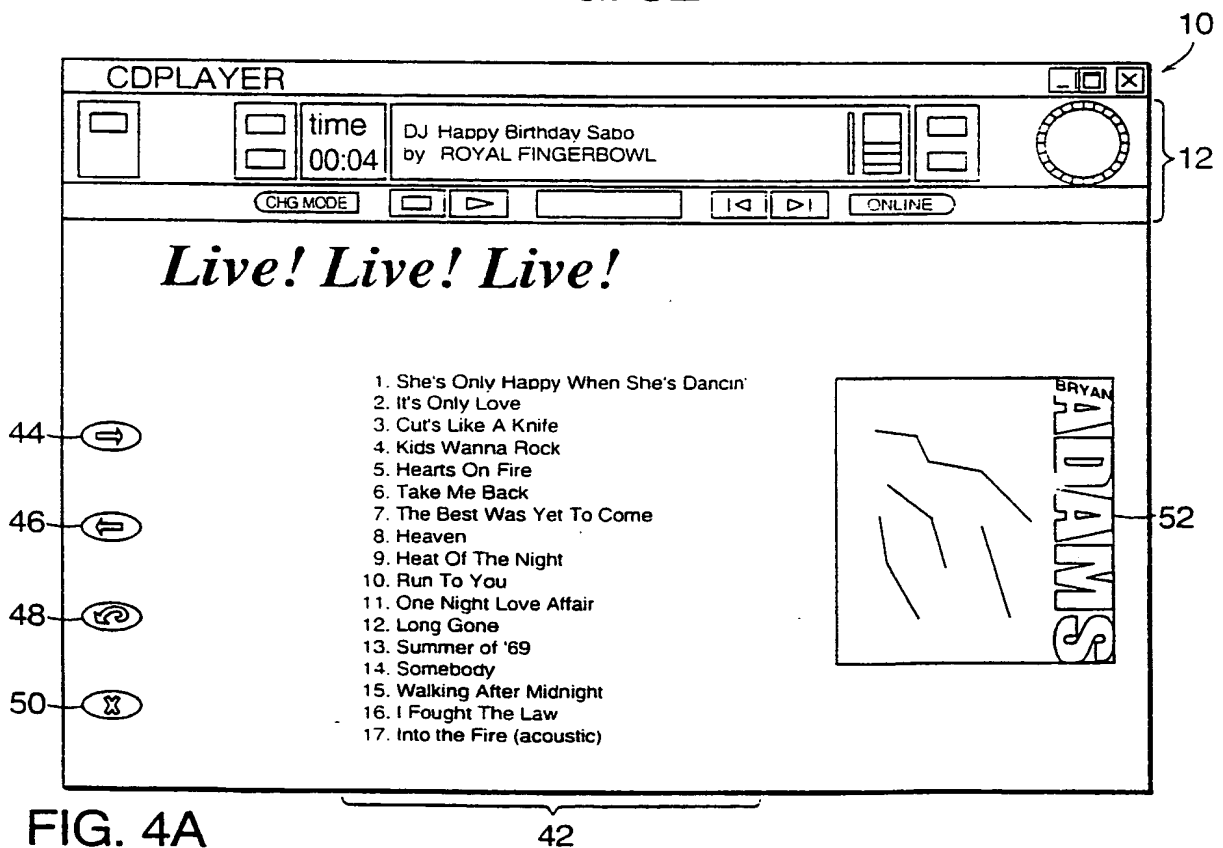


FIG. 4A

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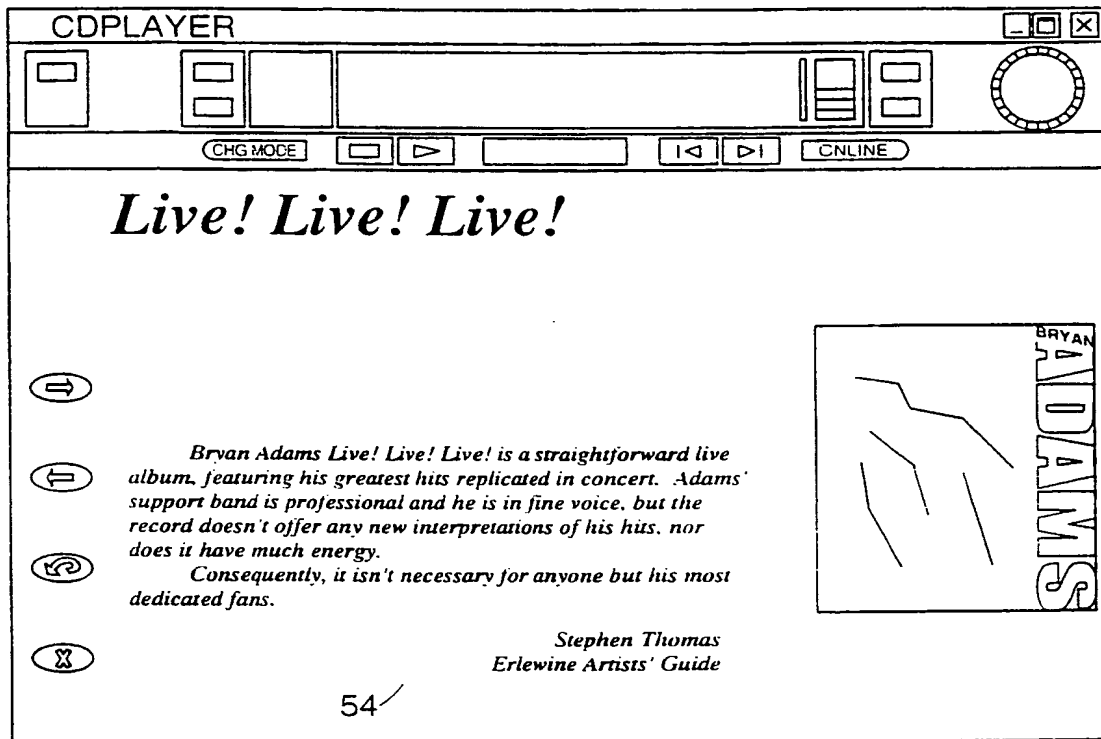


FIG. 4B

10

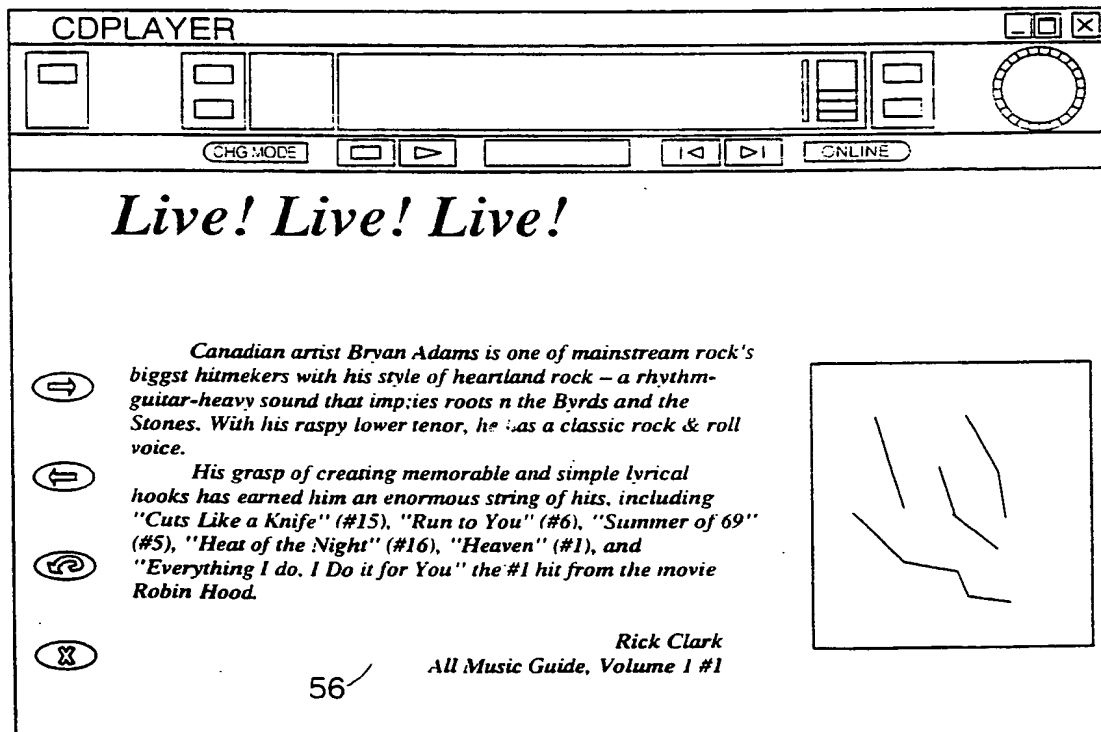


FIG. 4C

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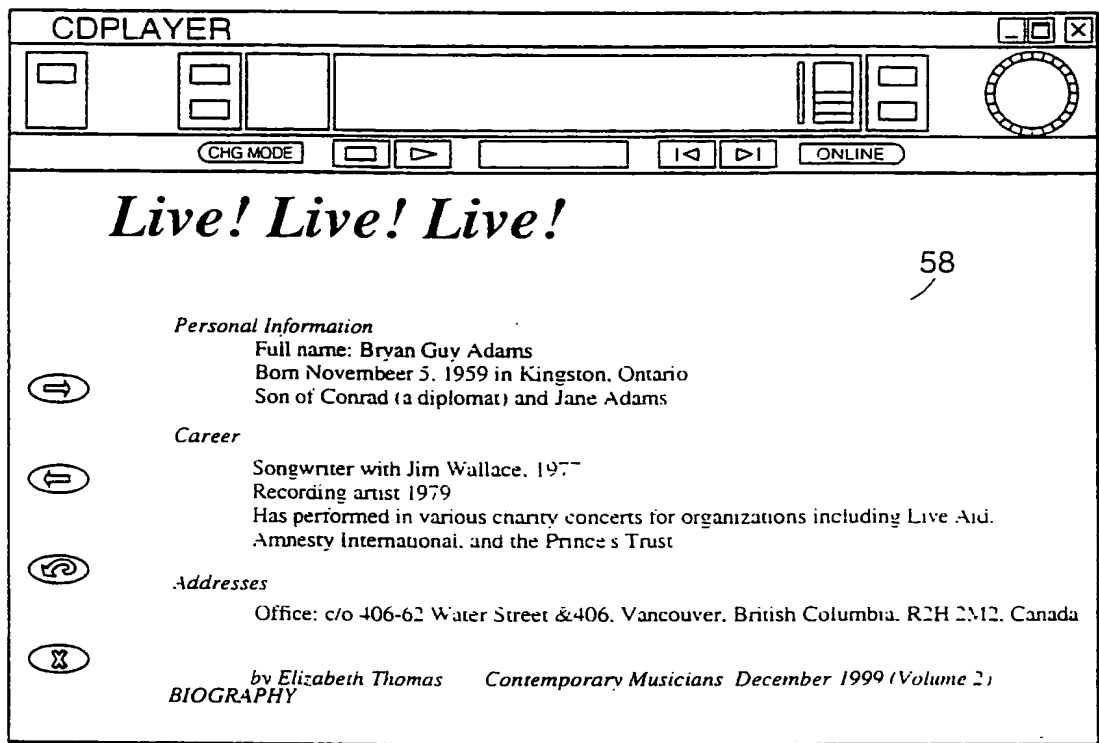


FIG. 4D

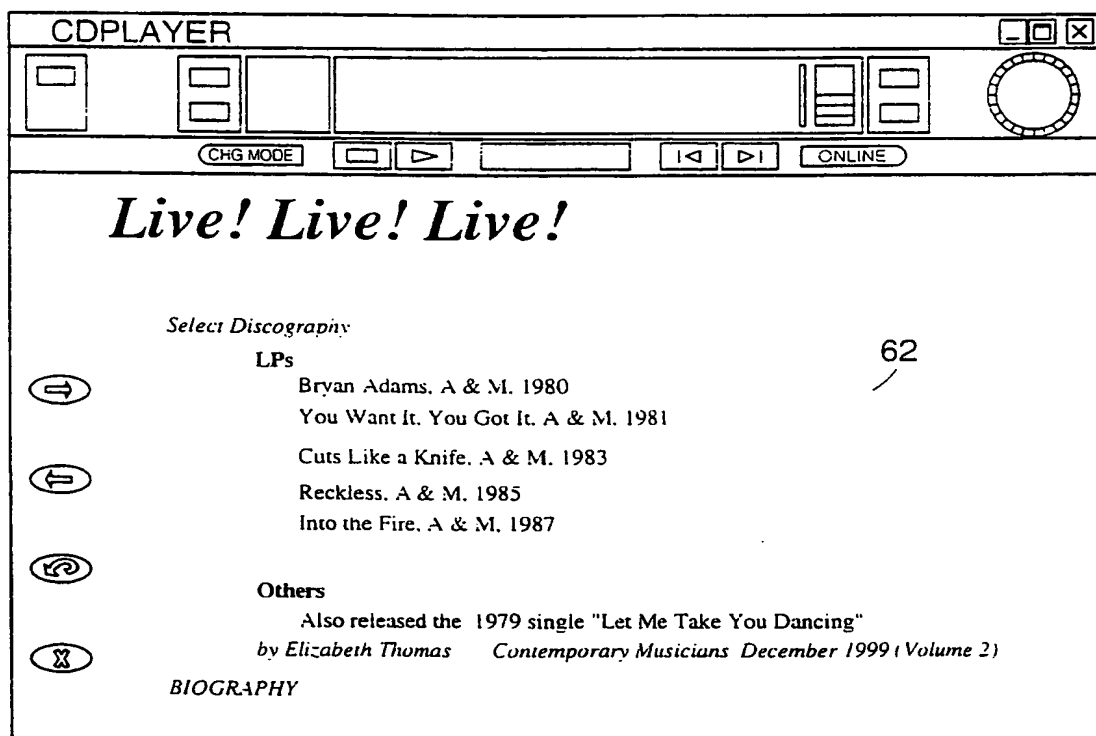


FIG. 4F

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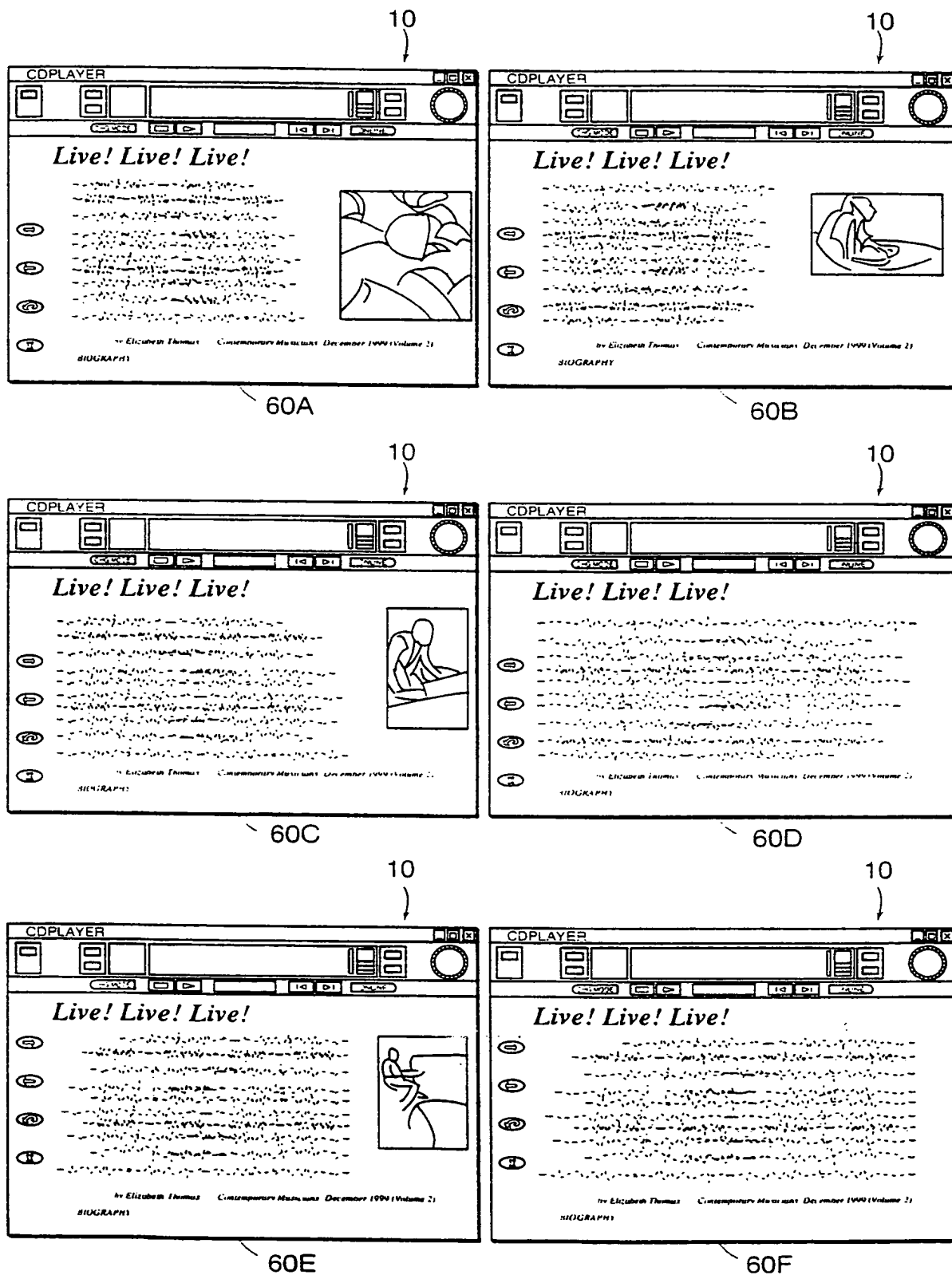


FIG. 4E

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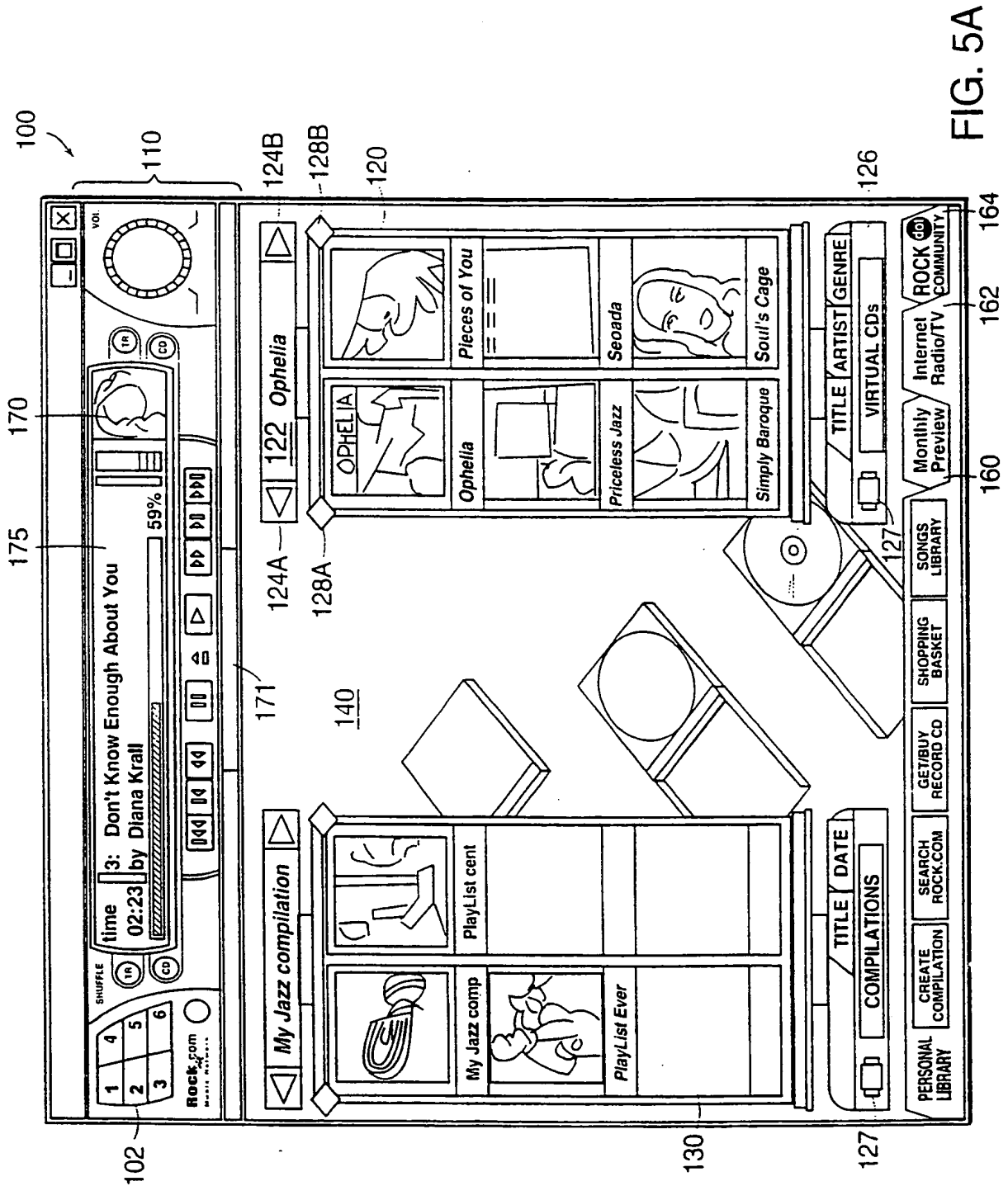


FIG. 5A

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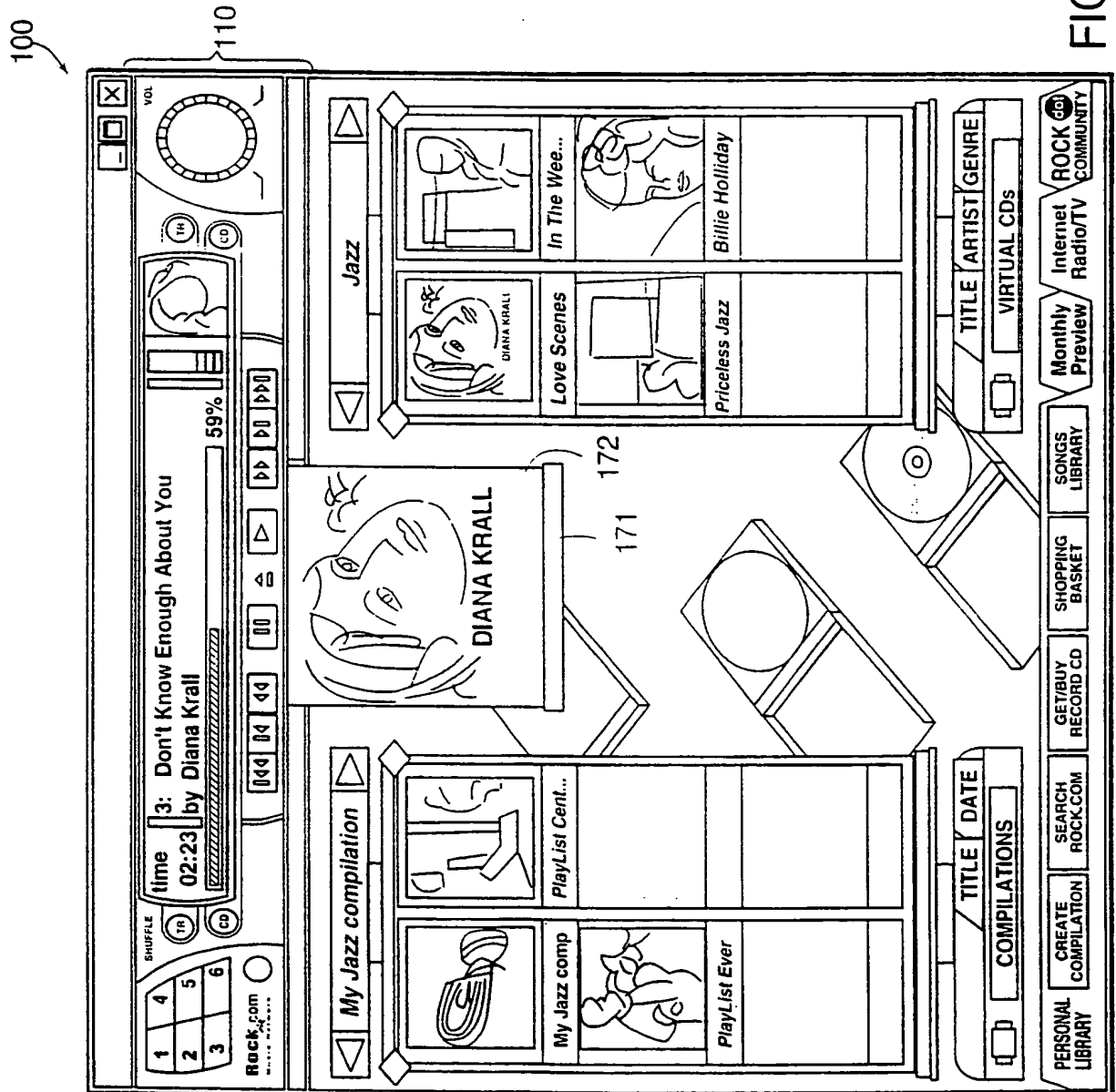


FIG. 5B

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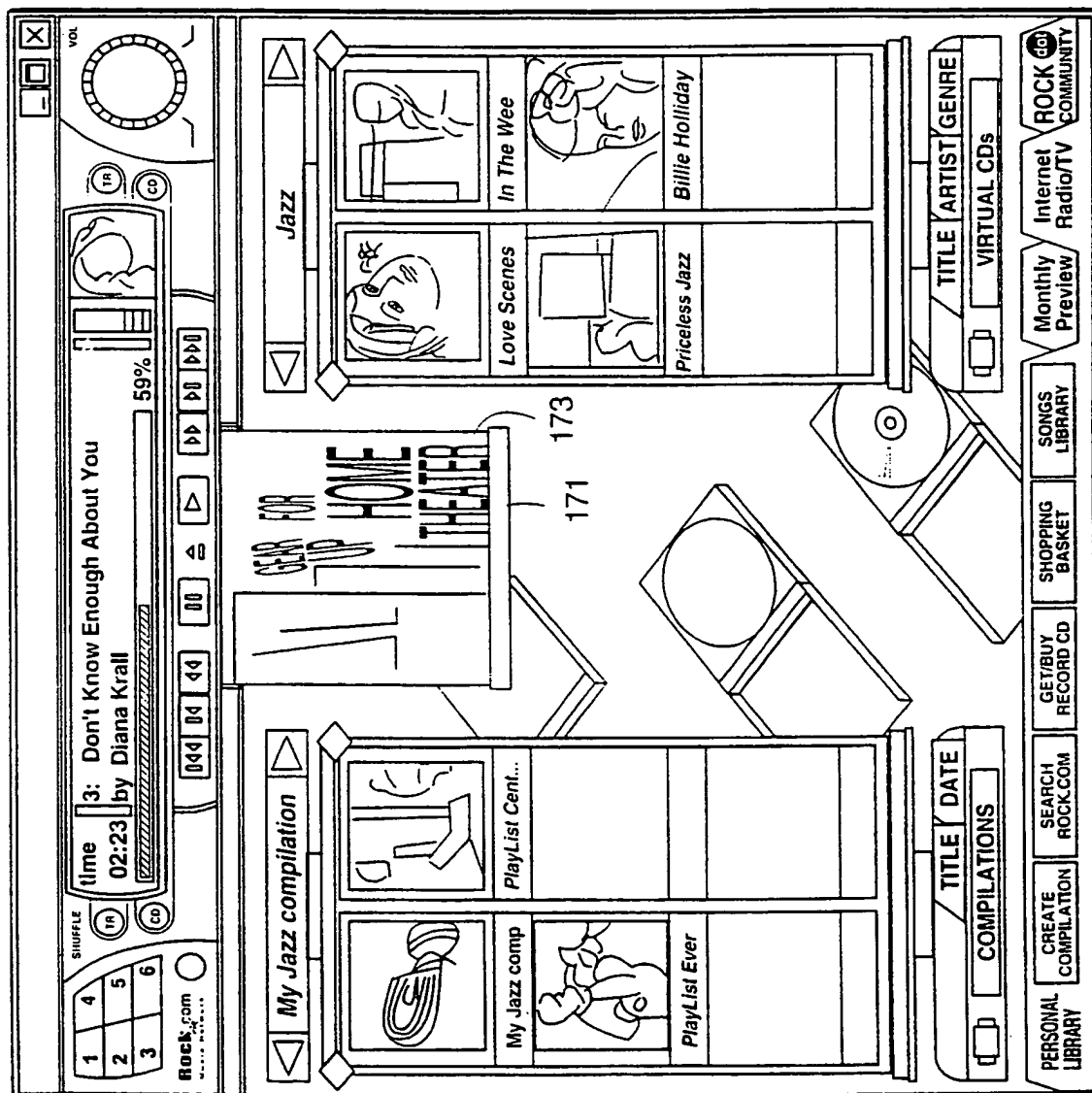


FIG. 5C

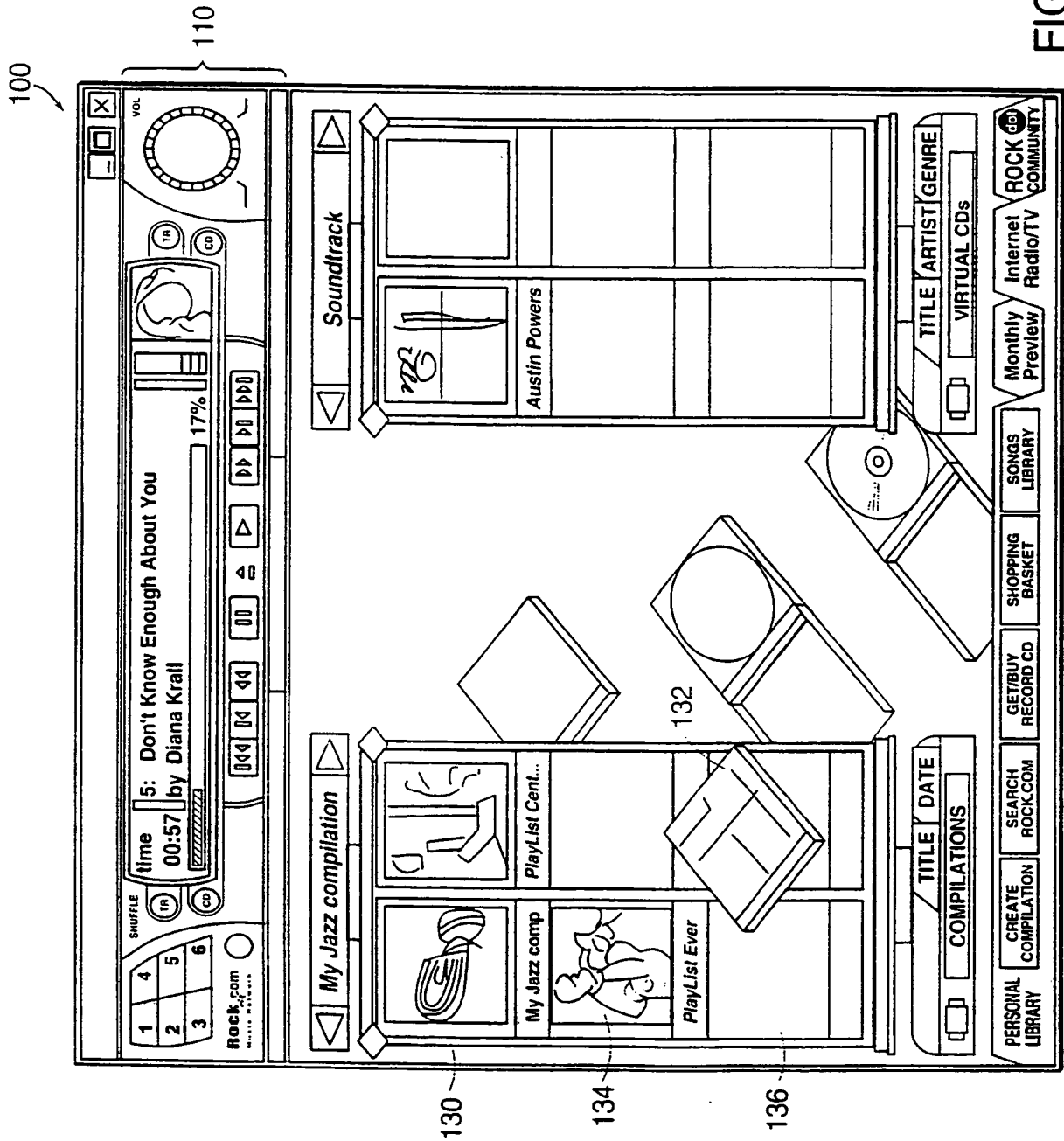
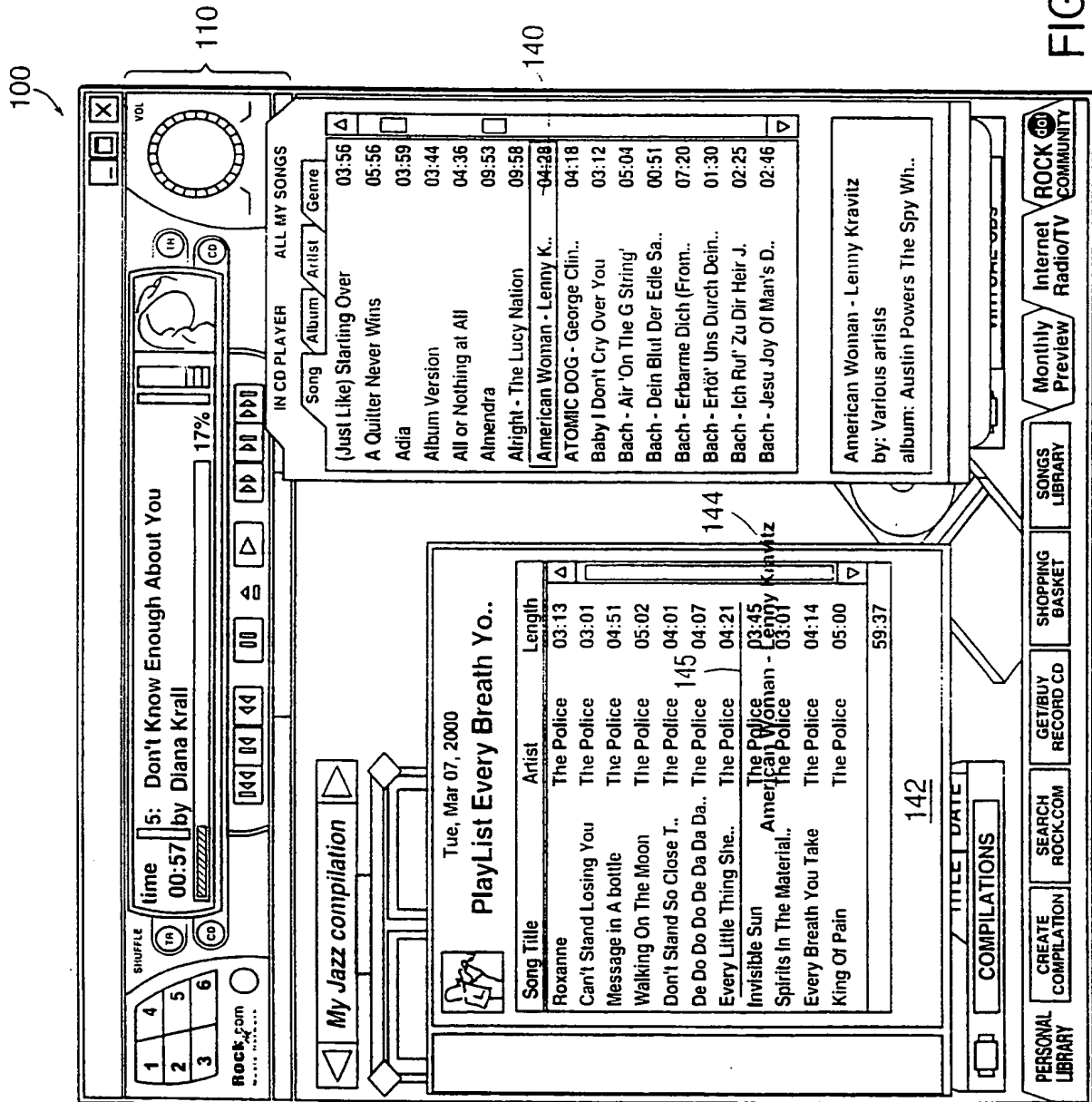


FIG. 6A

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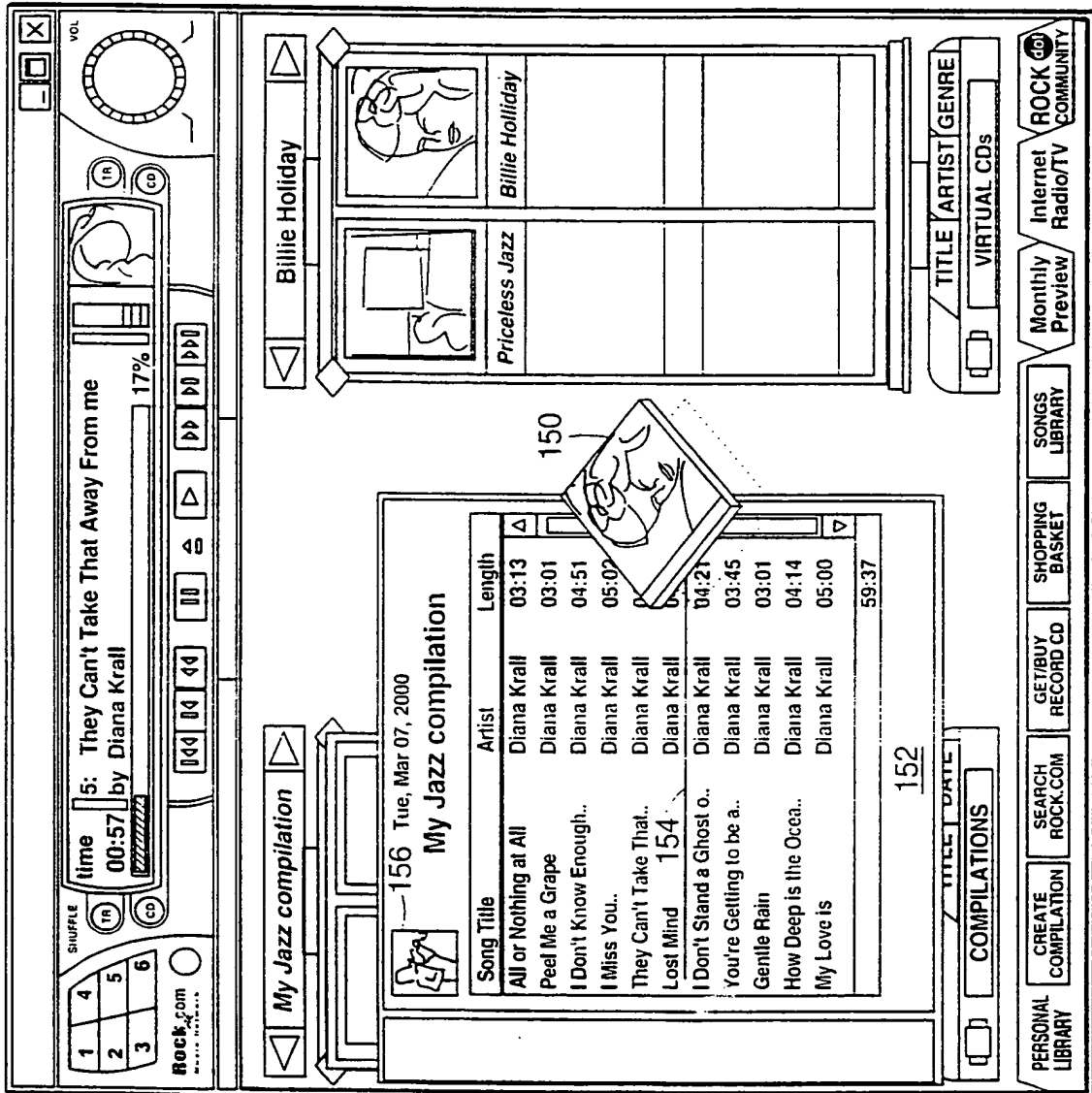


FIG. 6C

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100

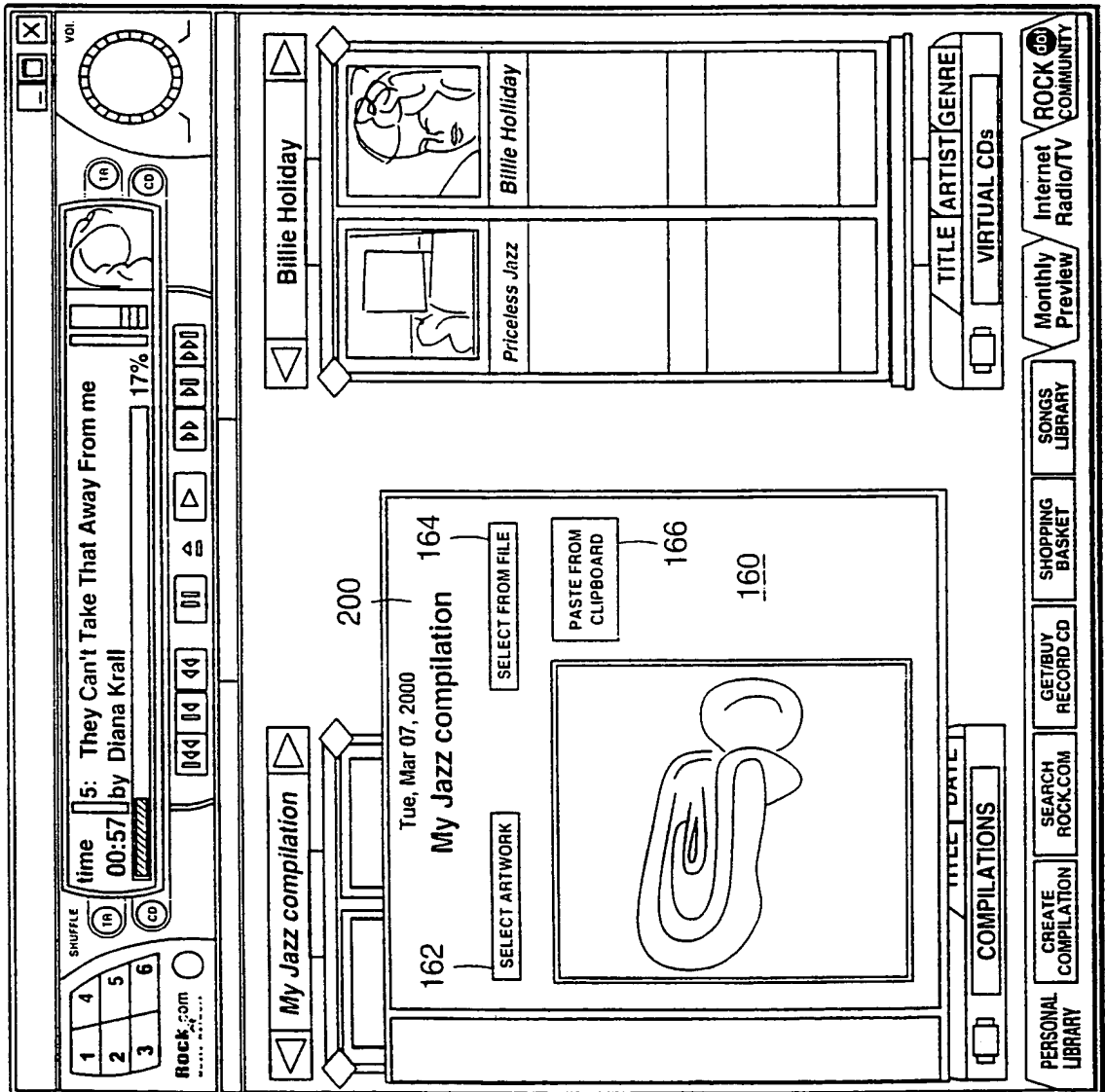


FIG. 6D

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100

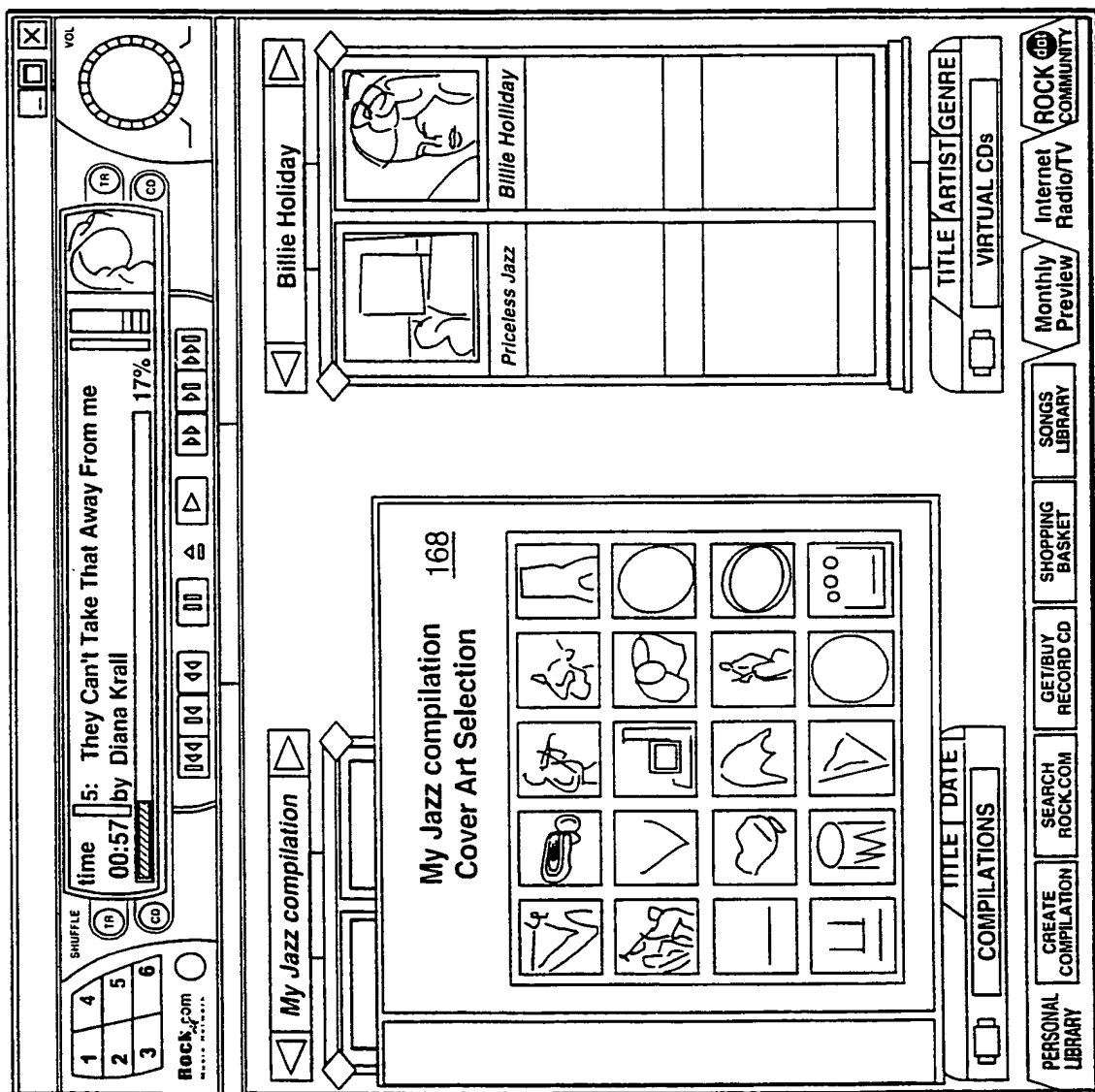


FIG. 6E

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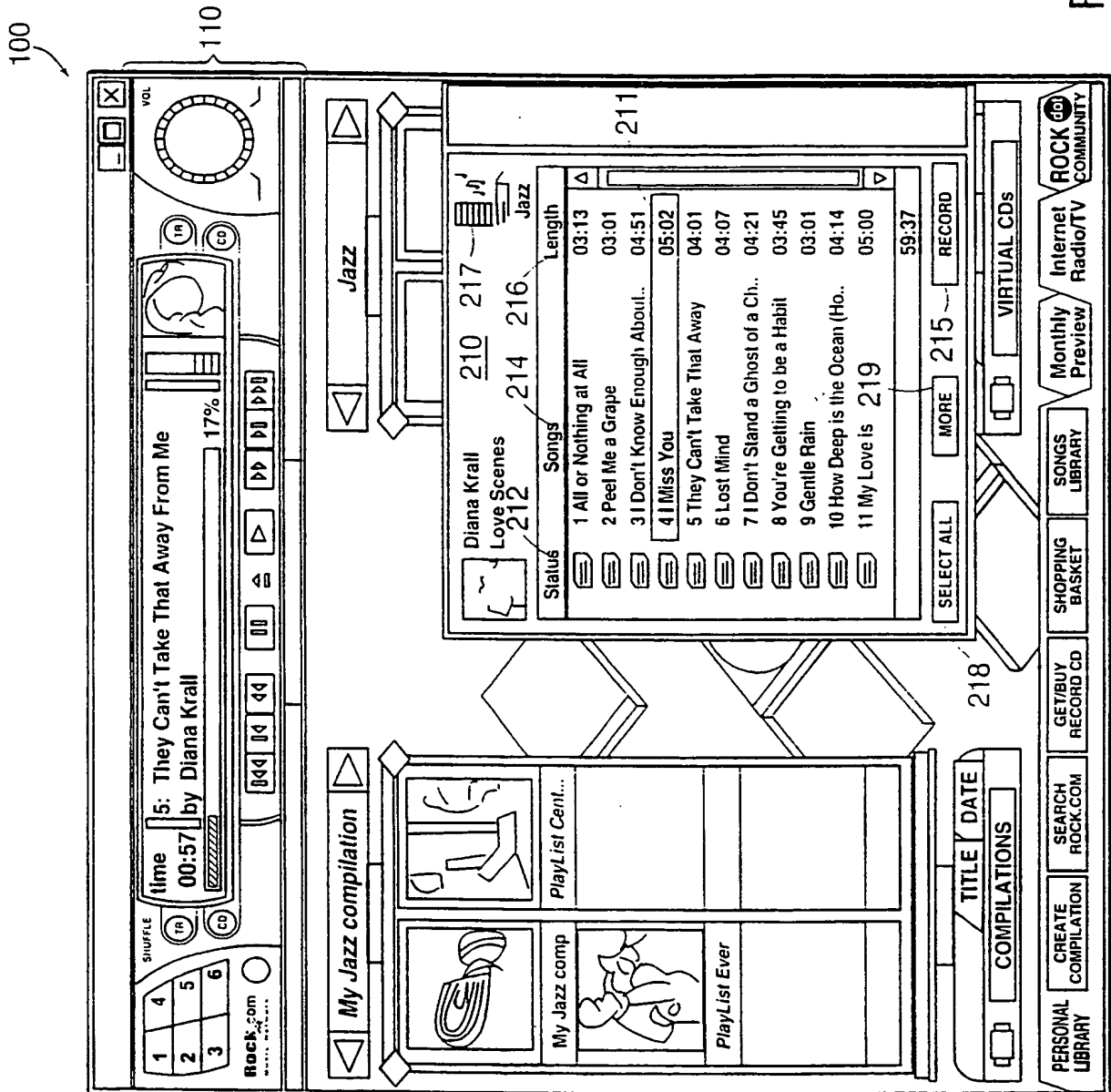


FIG. 7

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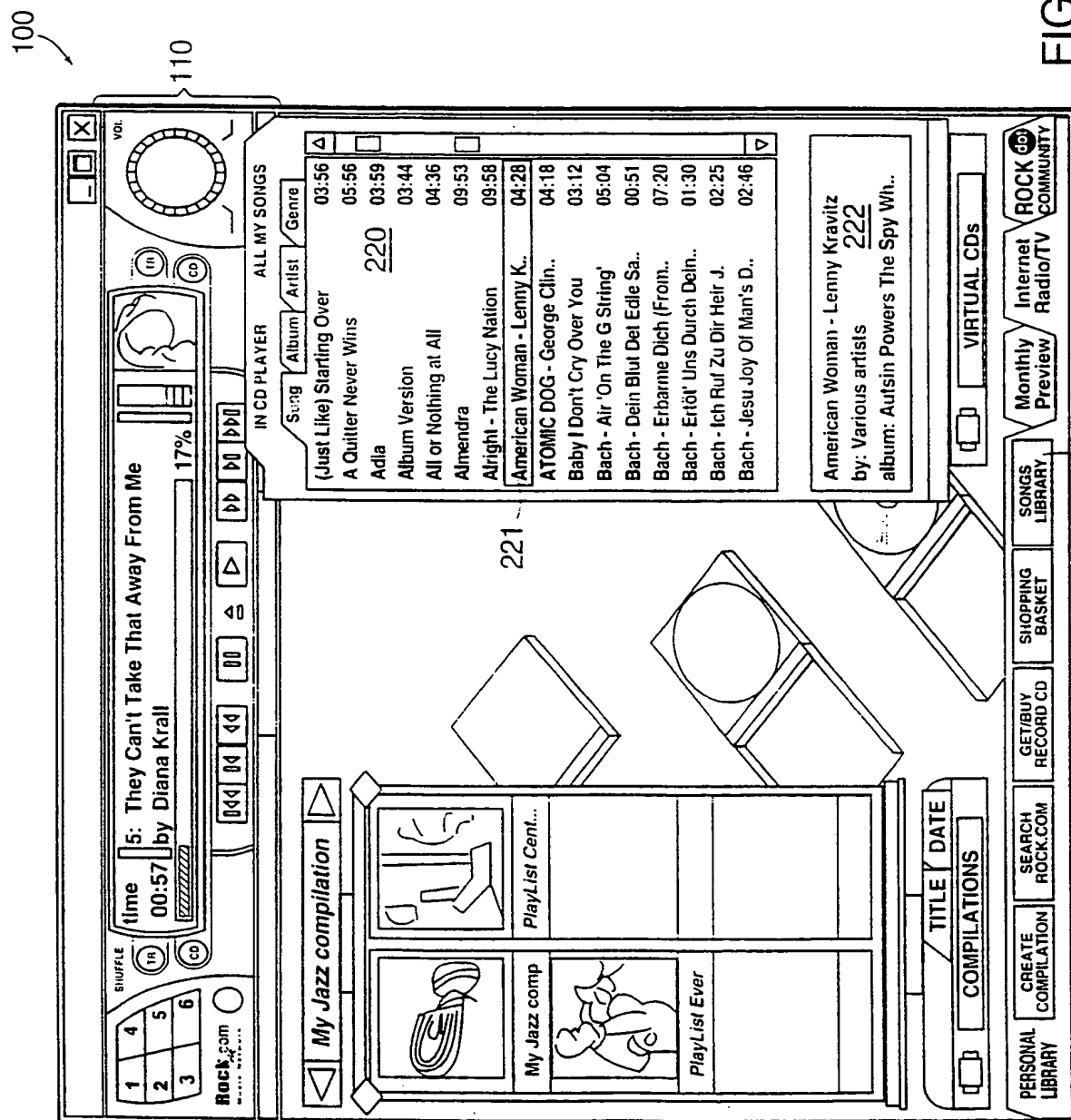


FIG. 8

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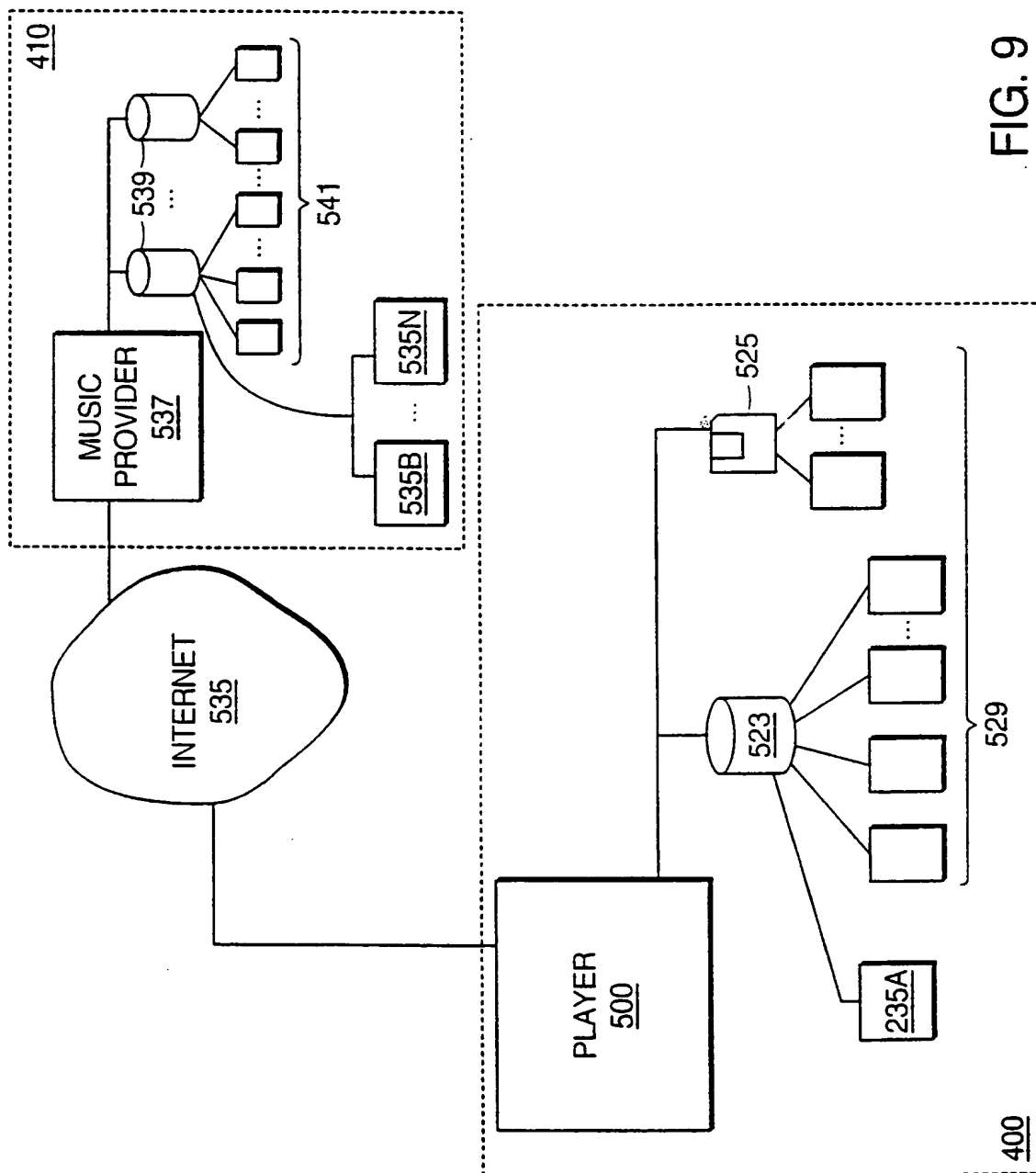


FIG. 9

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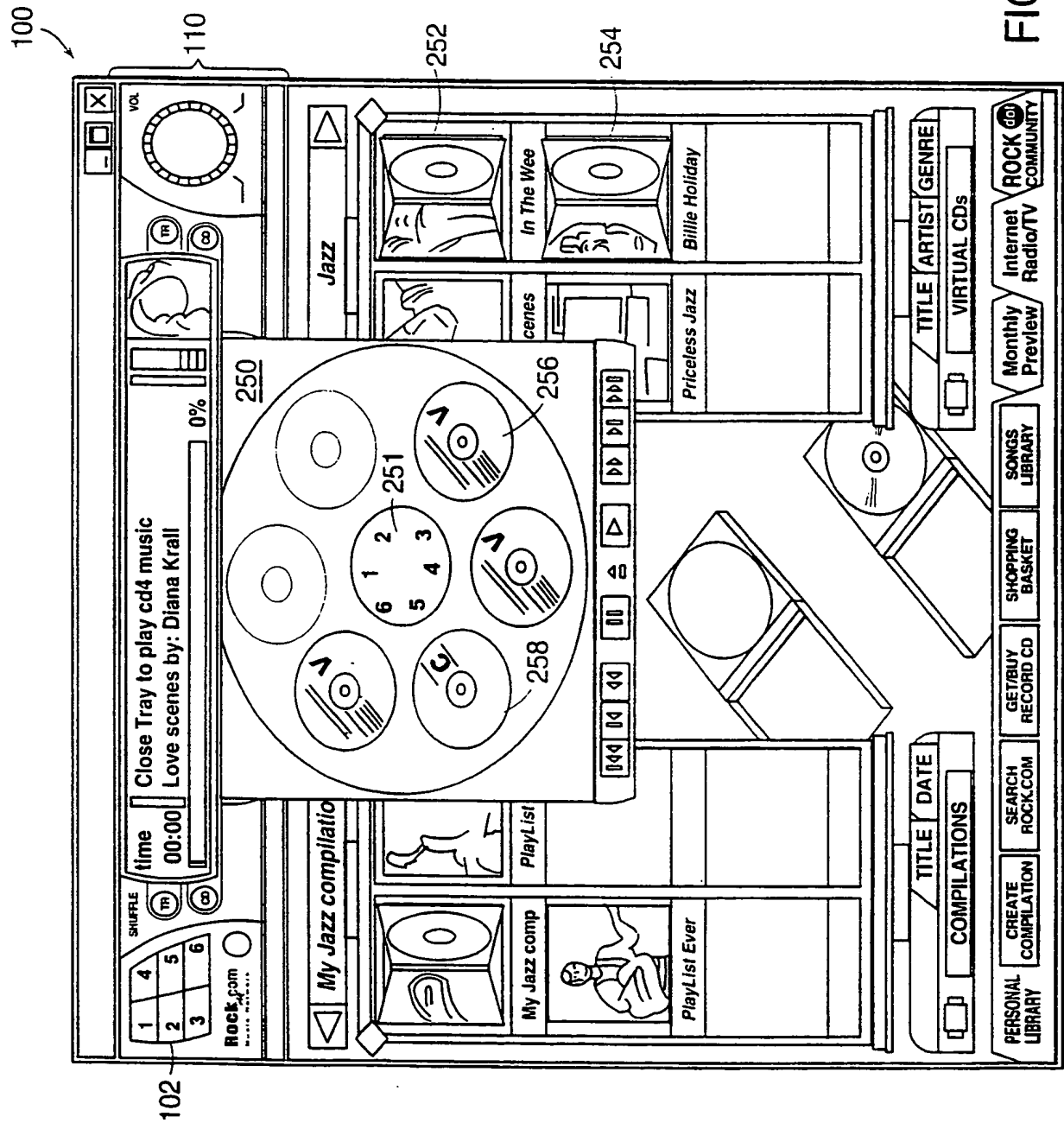
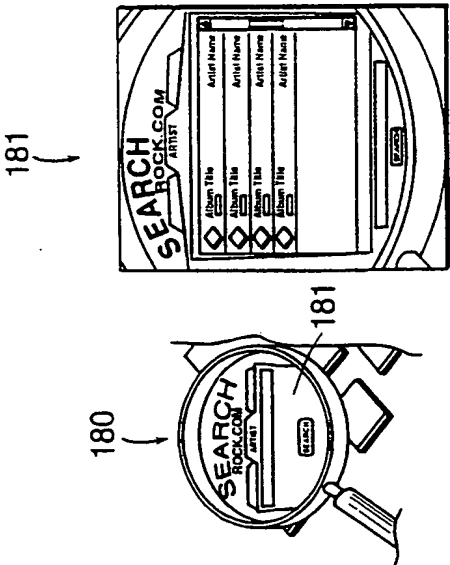
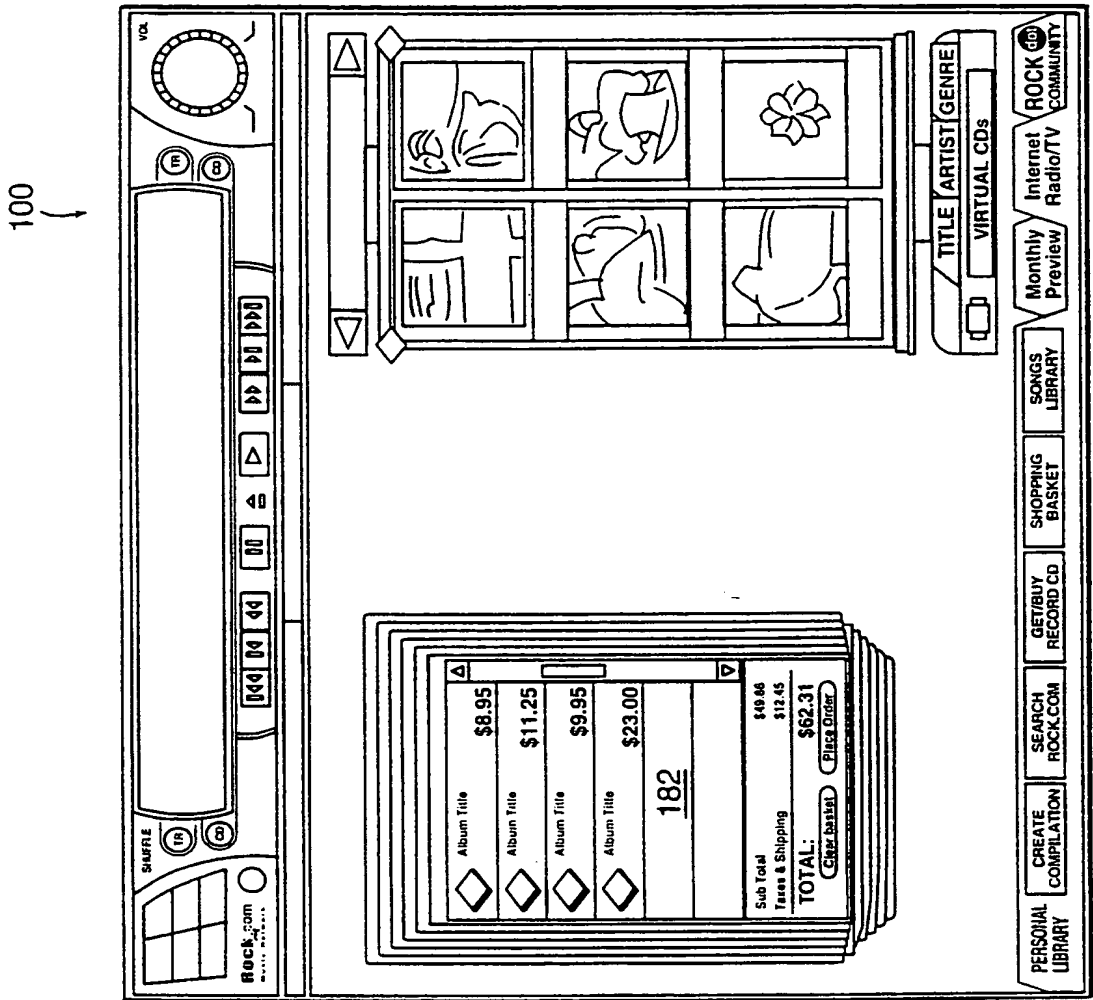


FIG. 10



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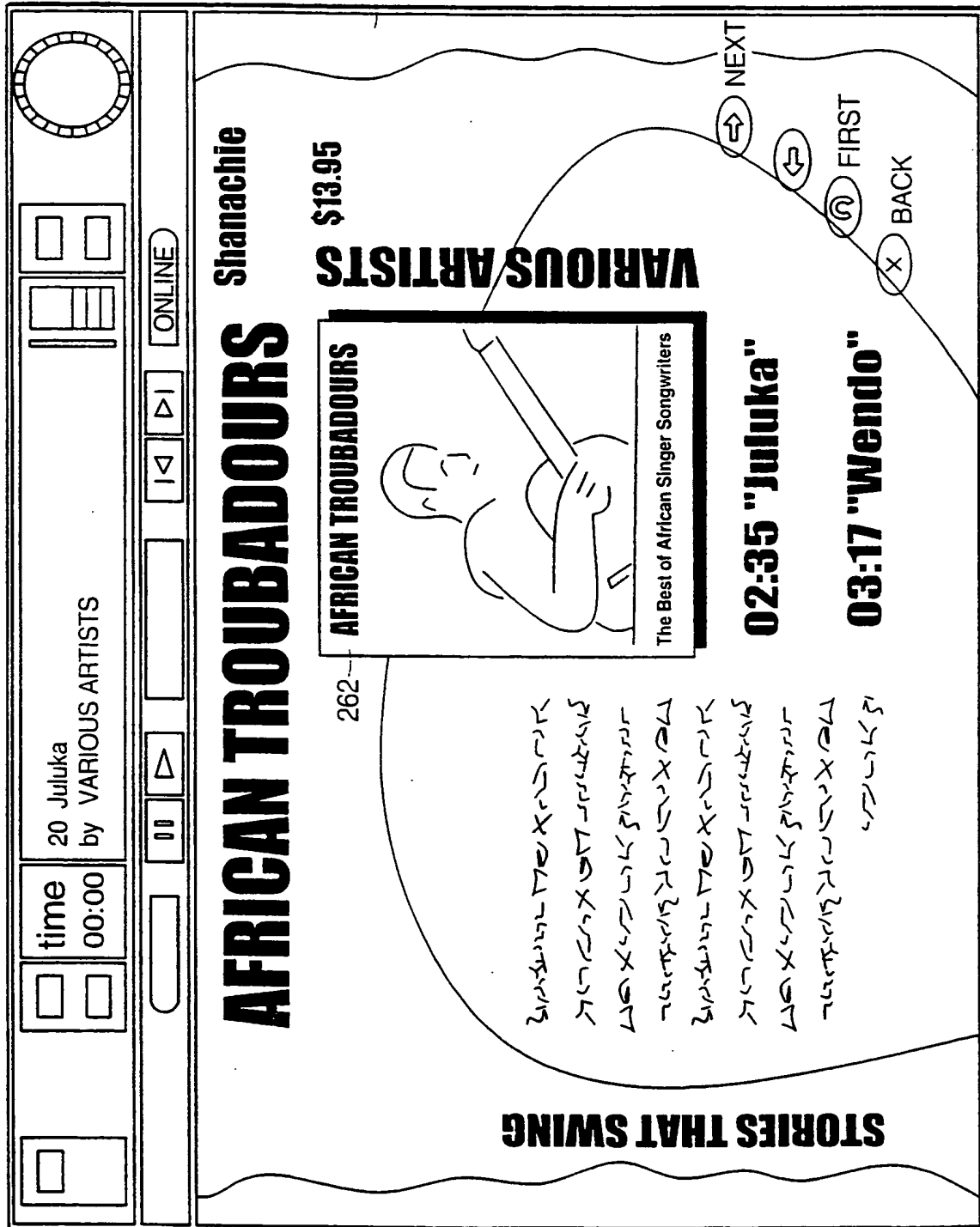
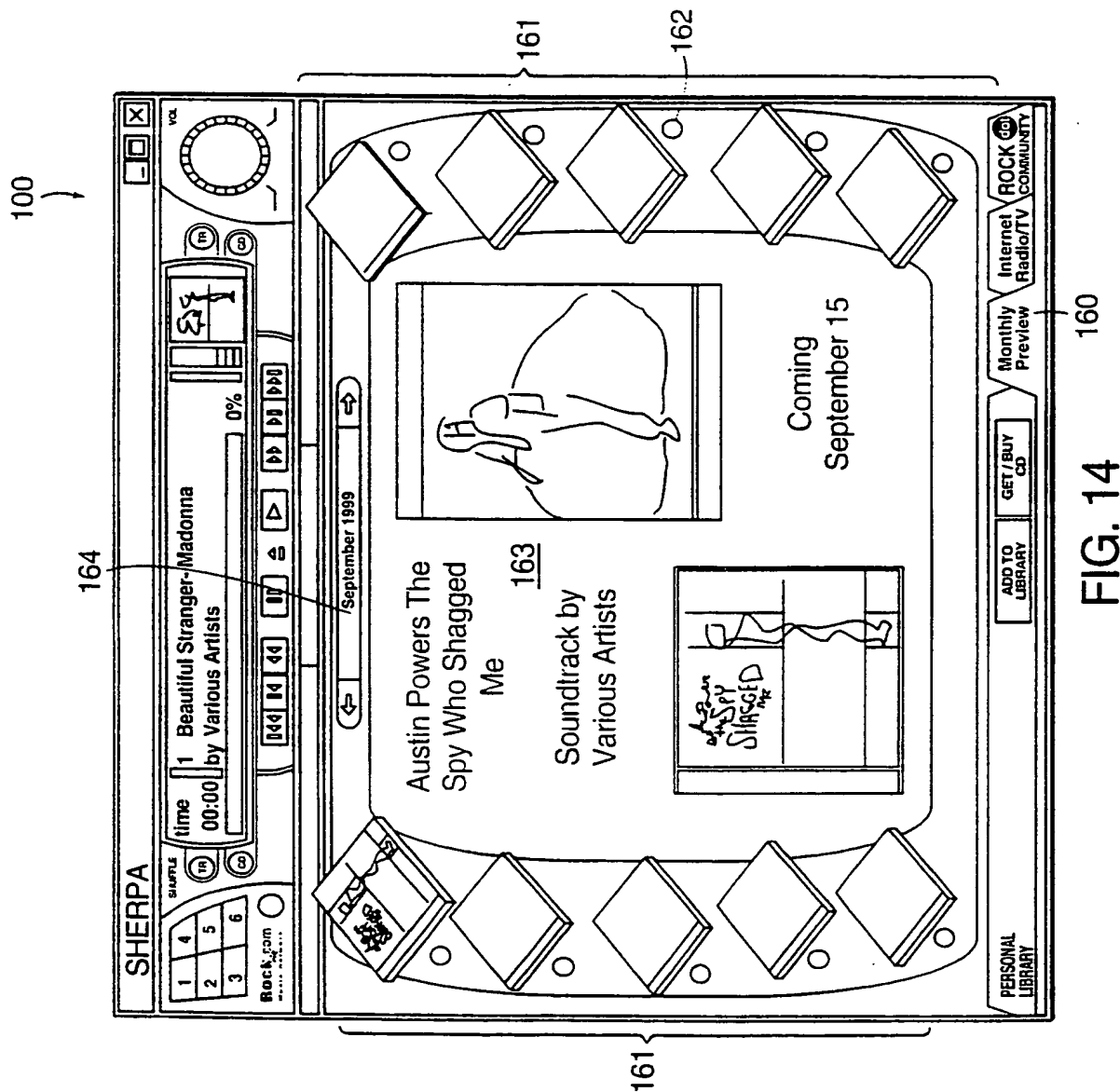
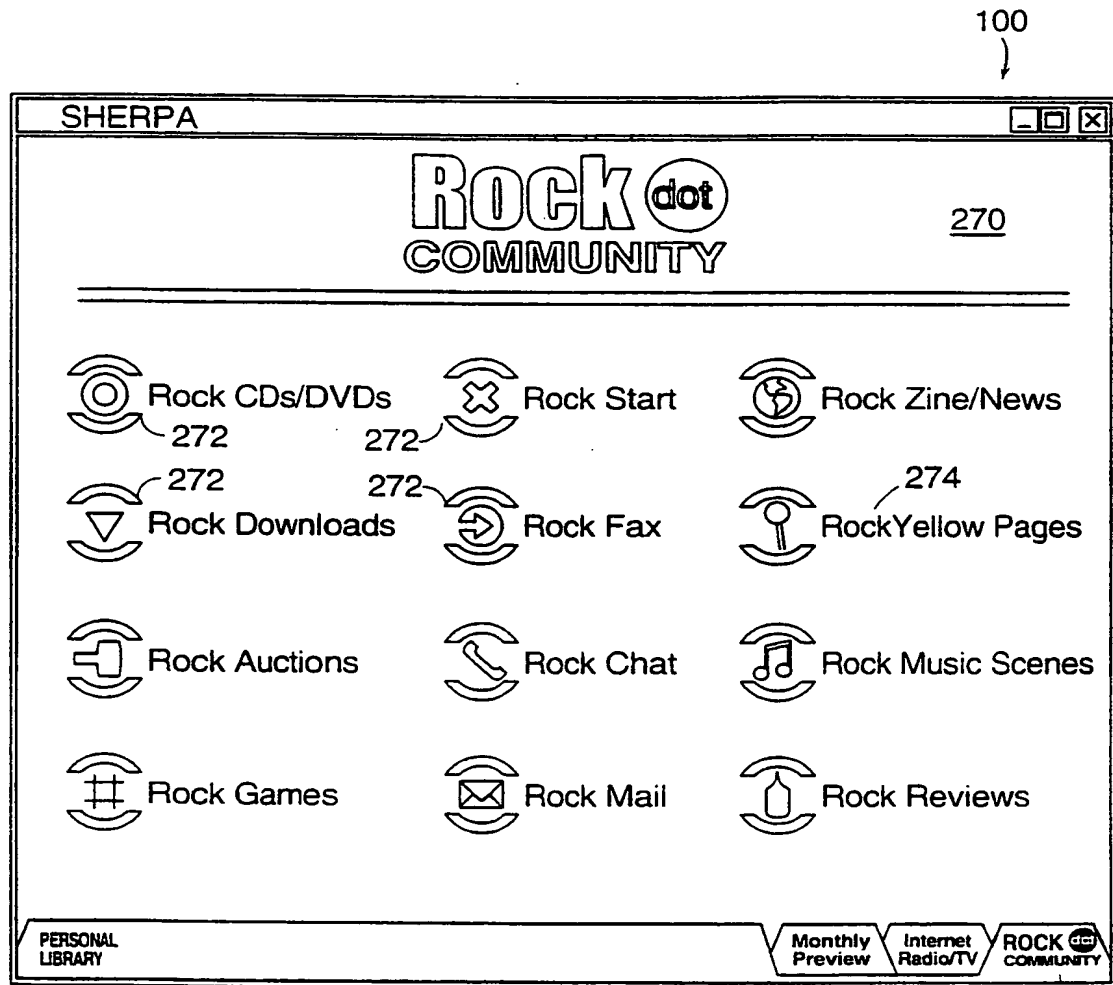


FIG. 13

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FIG. 15

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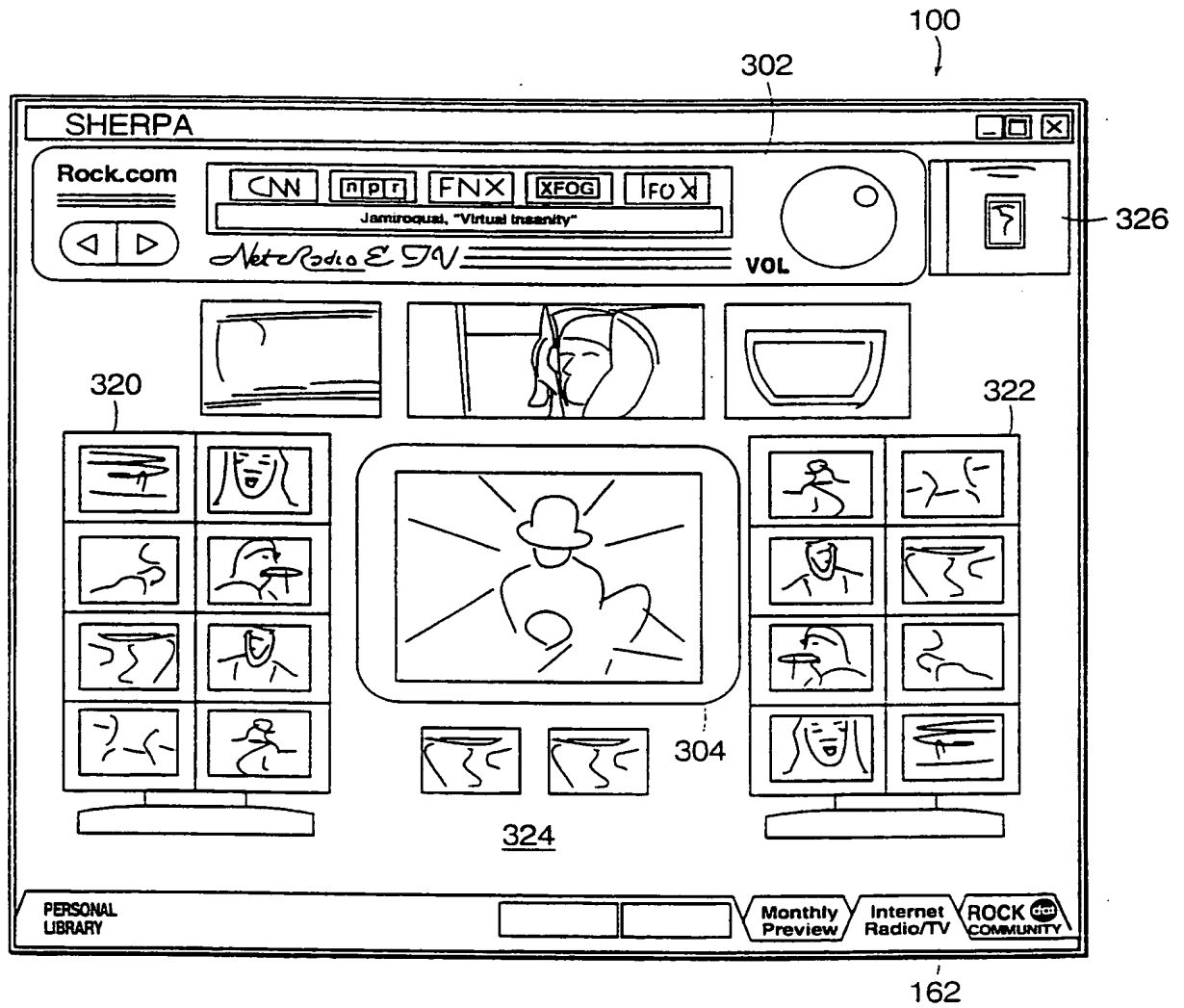
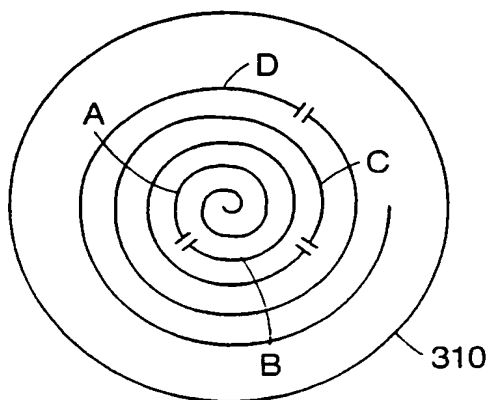
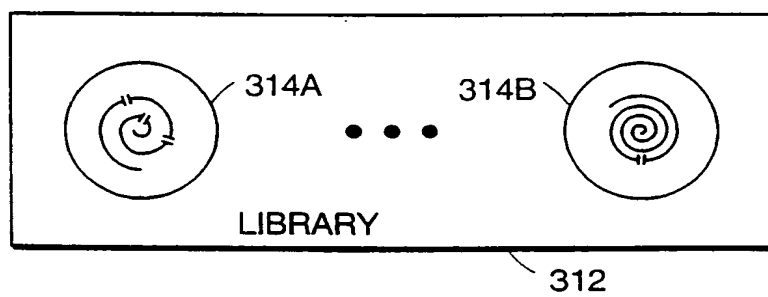


FIG. 16

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USER'S CD

FIG. 17

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/06188

A. CLASSIFICATION F SUBJECT MATTER
 IPC 7 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 327 327 A (IBM) 20 January 1999 (1999-01-20) page 6, line 21 -page 7, line 16; figures 1,2	1-8, 13, 16, 23, 25, 28, 30-32, 43, 44, 86-92, 94-97
A	EP 0 847 156 A (WOLFE ROBERT L) 10 June 1998 (1998-06-10) column 7, line 24 -column 8, line 54; figure 3 -/-	1, 38-41, 67, 68, 77, 86, 88-91, 95, 96

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search

26 July 2000

Date of mailing of the international search report

09/08/2000

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Authorized officer

Deane, E

INTERNATIONAL SEARCH REPORT

Internat Application No

PCT/US 00/06188

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ANON: "Stream Embedded Compressor/Decompressor" IBM TECHNICAL DISCLOSURE BULLETIN., vol. 38, no. 9, September 1995 (1995-09), pages 273-276, XP002143471 IBM CORP. NEW YORK., US ISSN: 0018-8689 page 273, line 1 -page 274, line 17; figure 1	1,86, 88-91, 95,96
X	EP 0 521 236 A (PIONEER ELECTRONIC CORP) 7 January 1993 (1993-01-07) abstract	107
X	PATENT ABSTRACTS OF JAPAN vol. 015, no. 492 (P-1287), 12 December 1991 (1991-12-12) & JP 03 212724 A (FUJITSU LTD), 18 September 1991 (1991-09-18) abstract	107
X	EP 0 397 404 A (ALPHATRONIX INC) 14 November 1990 (1990-11-14) column 6, line 34 -column 7, line 1 abstract; figures 1,2	107

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/06188

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EP 0847156	A	10-06-1998	US 5931901	A	03-08-1999
			US 6038591	A	14-03-2000
EP 0521236	A	07-01-1993	JP 5012784	A	22-01-1993
JP 03212724	A	18-09-1991	NONE		
EP 0397404	A	14-11-1990	CA 2014799	A	08-11-1990
			JP 3129443	A	03-06-1991
			US 5537592	A	16-07-1996

Form PCT/ISA/210 (patent family annex) (July 1992)

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